CITY OF POMPANO BEACH

2025 Water Supply Facilities Work Plan

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Abbreviations

2020 BC WSFWP	2020 Broward County 10-Year Water Supply Facilities Work Plan
AAD	annual average demand
AADF	annual average daily flow
ADD	average day demand
af	acre-feet
AH	Applicants Handbook for Water Use Permit Applications
AMI	automatic meter infrastructure
ASR	aquifer storage and recovery
AWS	alternative water supply
AWWA	American Water Works Association
BC MIL	Broward County Mobile Irrigation Lab
BC WWTP	Broward County North Regional Wastewater Treatment Plant
BCWWS	Boward County Water and Wastewater Services
BEBR	Bureau of Economic and Business Research
C-51 Project	C-51 Reservoir AWS Project
Carollo	Carollo Engineers
CCR	Consumer Confidence Report
CERP	Comprehensive Everglades Restoration Plan
CIP	capital improvement program
City	City of Pompano Beach
Compact	South Florida Regional Climate Change Compact
CRA	Community Redevelopment Agency
EAA	Everglades Agricultural Area
F	Fahrenheit
F.A.C.	Florida Administrative Code
F.S.	Florida Statute
FAS	Floridan Aquifer System
FDEP	Florida Department of Environmental Protection
FSAWWA	Florida Section of the American Water Works Association
FWEA	Florida Water Environment Association
FY	fiscal year
GIS	geographic information systems
gpcd	gallons per capita per day
gpd	gallons per day
gpm	gallons per minute
HET	high efficiency toilet
HFPO-DA (GenX)	hexafluoropropylene oxide dimer acid

HI	Hazard Index
hp	horsepower
HSP	high service pump
IWS	injection well system
L/R	load resource
LBTS	Town of Lauderdale-by-the-Sea
LEC	Lower East Coast Water Supply Planning Area
LEC Plan Update	2023-2024 Lower East Coast Plan Update
LECWSP	Lower East Coast Water Supply Plan
LF	linear foot
LHP	City of Lighthouse Point
LOS	level of service
LP/DP	Leak Prevention and Detection Program
LS	lime softening
MCC	motor control center
MCL	maximum contaminant levels
MCLG	maximum contaminant level goal
MDD	maximum day demand
MFL	minimum flows and levels
MG	million gallons
mg/L	milligrams per liter
mgd	million gallons per day
MGY	million gallons per year
MOR	monthly operating report
NF	nanofiltration
ng/L	nanograms per liter
NIS	NatureScape Irrigation Service
NPDWR	National Primary Drinking Water Regulation
NRWWTP	North Regional Wastewater Treatment Plant
O&M	operations and maintenance
OASIS	Our Alternative Supply Irrigation System
OOL	Ocean Outfall Legislation
P3	public-private partnership
PBA	Palm Beach Aggregates, LLC
PFAM	Population Forecast and Allocation Model
PFAS	per- and polyfluoroalkyl substances
PFHxS	perfluorohexanesulfonic acid
PFNA	perfluorononanoic acid
PFOA	perfluorooctanoic acid

PFOS	perfluorooctane sulfonate
PG	power generation
PS	public supply
PVC	polyvinyl chloride
RO	reverse osmosis
RWA Rule	Regional Water Availability Rule
RWTF	reuse water treatment facility
SAS	Surficial Aquifer System
SCADA	supervisory control and data acquisition
SEFLUC	Southeast Florida Utility Council
SFWMD	South Florida Water Management District
SIP	Structure Inspection Program
STEM	science, technology, engineering, and mathematics
SWIMN	Saline Water Intrusion Monitoring Network
TAZ	traffic analysis zones
UFA	Upper Floridan Aquifer
USDA-NRCS	United States Department of Agriculture-Natural Resources Conservation Service
USEPA	United States Environmental Protection Agency
USGS	United Stated Geological Survey
UV	ultraviolet
WCA	water conservation area
WMPU	Pompano Beach Water Master Plan Update
WRF	water reclamation facility
WSFWP	Water Supply Facilities Work Plan
WTF	water treatment facility
WTP	water treatment plant
WUP	Water Use Permit
YRR	Year-Round Landscape Irrigation Conservation Measure

CHAPTER 1 INTRODUCTION

The City of Pompano Beach (City) is required to update their 10-Year Water Supply Facilities Work Plan (WSFWP) every 5 years or within 18 months after the South Florida Water Management District (SFWMD) governing board approves an updated regional water supply plan.

Changes in the updated regional water plan pertinent to the City's local water supply shall be reflected in the City's updated WSFWP as per Florida Statutes, Section 163.3177 (6) (c). The City's WSFWP was last updated in October 2020.

As of September 24, 2024, the SFWMD has issued the final order approving the 2023-2024 Lower East Coast Plan Update (LEC Plan Update). Therefore, the deadline for local governments within the Lower East Coast Region to amend their Comprehensive Plan and update their Water Facilities Supply Plans is March 24, 2026. The SFWMD has developed the LEC Plan Update to assess projected water demands and potential sources of water for the period from 2021 to 2045.

The City of Pompano Beach adopted their WSFWP, dated October 2020, and this WSFWP update, dated August 2025, by reference into the City's Comprehensive Plan, for a planning period of not less than 10 years. Any changes affecting this 2025 WSFWP Update shall be included in the annual Capital Improvements Plan update to ensure consistency between the Potable Water Sub-element and the Capital Improvements Element.

1.1 Background

The Florida Legislature enacted Senate Bills 360 and 444 to address the finding that traditional supply sources will not be sufficient to meet demands of the growing population, industries, and the environment. As a result of these bills, significant changes were made to Chapters 163 Intergovernmental Programs and 373 Water Resources, Florida Statute (F.S.) to improve the coordination of water supply and land use planning by strengthening the statutory requirements linking regional water supply plans prepared by the water management districts and comprehensive plans prepared by local governments.

The 2023-2024 LEC Plan Update is consistent with the water supply planning requirements of Chapter 373 F.S. and presents population and water demand projections through 2045, a review of water supply issues and evaluations, and a list of water source options. The 2024 LEC Plan Update contains guidance to help focus future efforts in the region to meet projected water needs. Some of the key overall suggestions to regional stakeholders, including the SFWMD, utilities, other government agencies, agricultural interests, and environmental groups, are as follows:

- Employ robust water conservation programs to increase water use efficiency and reduce the amount of water needed to meet future demands.
- Implement minimum flows and levels (MFL) recovery and prevention strategies, in conjunction with future water supply plan updates.
- Continue development of alternative water supplies, including maximizing the use of reclaimed water.
- Design new Floridan Aquifer wellfields to maximize withdrawals while minimizing water level and quality changes.

- Develop regional and local reservoirs and other storage systems, where possible, to increase surface water availability for environmental, agricultural, and urban water supply needs.
- Continue supporting ecosystem restoration efforts, including the Restoration Strategies Regional Water Quality Plan and the Comprehensive Everglades Restoration Plan (CERP).
- Identify wells critical to long-term monitoring and modeling to ensure they are constructed, maintained, or replaced, as necessary.
- Continue to characterize, monitor, and design adaptation solutions in response to climate change and sea level rise impacts to water supply.

The current statutory provisions direct local governments to do the following with regard to water supply:

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

2. Revise the Potable Water Sub-Element to adopt a water supply facilities work plan covering at least a 10-year planning period to meet existing and projected demand. The work plan must address those water supply facilities for which the local government has responsibility and include the facilities needed to develop alternative water supplies. The work plan must also identify conservation and reuse measures to meet future needs. [Section 163.3177(6)(c), Florida Statutes.]

3. Revise the Conservation Element to assess current and projected water needs and sources for at least a 10-year planning period. The analysis must consider the existing levels of water conservation, use, and protection and the applicable policies of the water management district, and the district's approved regional water supply plan. In the absence of an approved regional water supply plan, the analysis must consider the district's approved water management plan. [Section 163.3177(6) (d) 3, Florida Statutes.]

4. Revise the Capital Improvements Element to identify capital improvements projects to be implemented in the first 5 years of the work plan for which the local government is responsible, including both publicly and privately funded water supply projects necessary to achieve and maintain adopted level of service standards; and adopt a five-year schedule of capital improvements to include those projects as either funded or unfunded, and if unfunded, assigned a level of priority for funding. [163.3177(3) (a) 4, Florida Statutes.]

5. Revise the Intergovernmental Coordination Element to adopt principles and guidelines to be used to coordinate the comprehensive plan with the regional water supply authority (if applicable) and with the applicable regional water supply plan. [163.3177(6) (h) 1, Florida Statutes.]

6. During the Evaluation and Appraisal review, determine if comprehensive plan amendments are necessary to reflect statutory changes related to water supply and facilities planning since the last update to the comprehensive plan. If necessary, transmit the amendments to incorporate the statutory changes as appropriate. [Section 163.3191(1) and (2), Florida Statutes.]"

This WSFWP Update is meant to satisfy portions of the above statutory requirements as stated in Item 1 above, to coordinate with the Lower East Coast Water Supply Planning Area (LEC) regional water supply plan.

1.2 Purpose and Objectives

The purpose of this WSFWP is to update the City's 2020 WSFWP to incorporate changes to the 2023-2024 LEC Plan Update that are applicable to the City. The objective of this report is to assess the City's current water supply and facility capacity to meet current and future water demands incorporating local and regional legislation, including the evaluation of traditional and alternative water sources. The WSFWP development will facilitate the required coordination efforts for water supply and land use planning between the City's Planning and Development and Utility Departments, the SFWMD, and each of the local governments that receive water from the City (City of Lighthouse Point [LHP] and Town of Lauderdale-by-the-Sea [LBTS]). The WSFWP incorporates information on Broward County Water and Wastewater Services (BCWWS), sourced from the 2020 Broward County 10-Year Water Supply Facilities Work Plan adopted on April 21, 2020 (2020 BC WSFWP). BCWWS provides water to portions of the City of Pompano Beach.

The information contained within this WSFWP 2025 Update will be included in upcoming amendment to various elements of the City's Comprehensive Plan.

1.3 Local Government Overview

The City of Pompano Beach is in northeastern Broward County along the Atlantic Ocean. It includes about 3 miles of beachfront, extending from the intersection of State Road A1A and Terra Mar Drive to the Hillsboro Inlet. The City covers the area extending from the Atlantic Ocean to Florida's Turnpike and from Sample Road to McNab Road in northeast Broward County. The City is bounded by the following municipalities: the City of Deerfield Beach on the north, Town of Hillsboro Beach and City of LHP on the northeast, Town of LBTS on the southeast, City of Fort Lauderdale on the south, and City of Margate and City of North Lauderdale on the west. Figure 1.1 depicts the City jurisdictional boundaries.

The City has a total area of approximately 25 square miles of which 1.4 square miles are water. As of April 2024, the City's Planning and Zoning Department reported a population of 114,703. The City's jurisdictional boundary is divided into five Commission Districts. The City manager oversees the three assistant City Managers in addition to the Community Redevelopment Agency (CRA), Fire, Police, and Public Communication Departments. The organization chart for the City is presented in Figure 1.1.

The City's jurisdictional boundary differs from the utility service area. The utility service area boundary, which underwent a minor correction during the 2020 WSFWP Update to include the existing water distribution system and exclude confirmed non-served areas, is shown in Figure 1.3. Figure 1.3 also shows the City's jurisdictional boundary and the existing water distribution system.

Services pertaining to the utility include drinking water, wastewater, reuse, and stormwater. The City does not have a wastewater treatment plant. The City manages a wastewater collection system that pumps directly into the Broward County North Regional Wastewater Treatment Plant (NRWWTP). The City's drinking water and reuse system are owned and operated by the City.

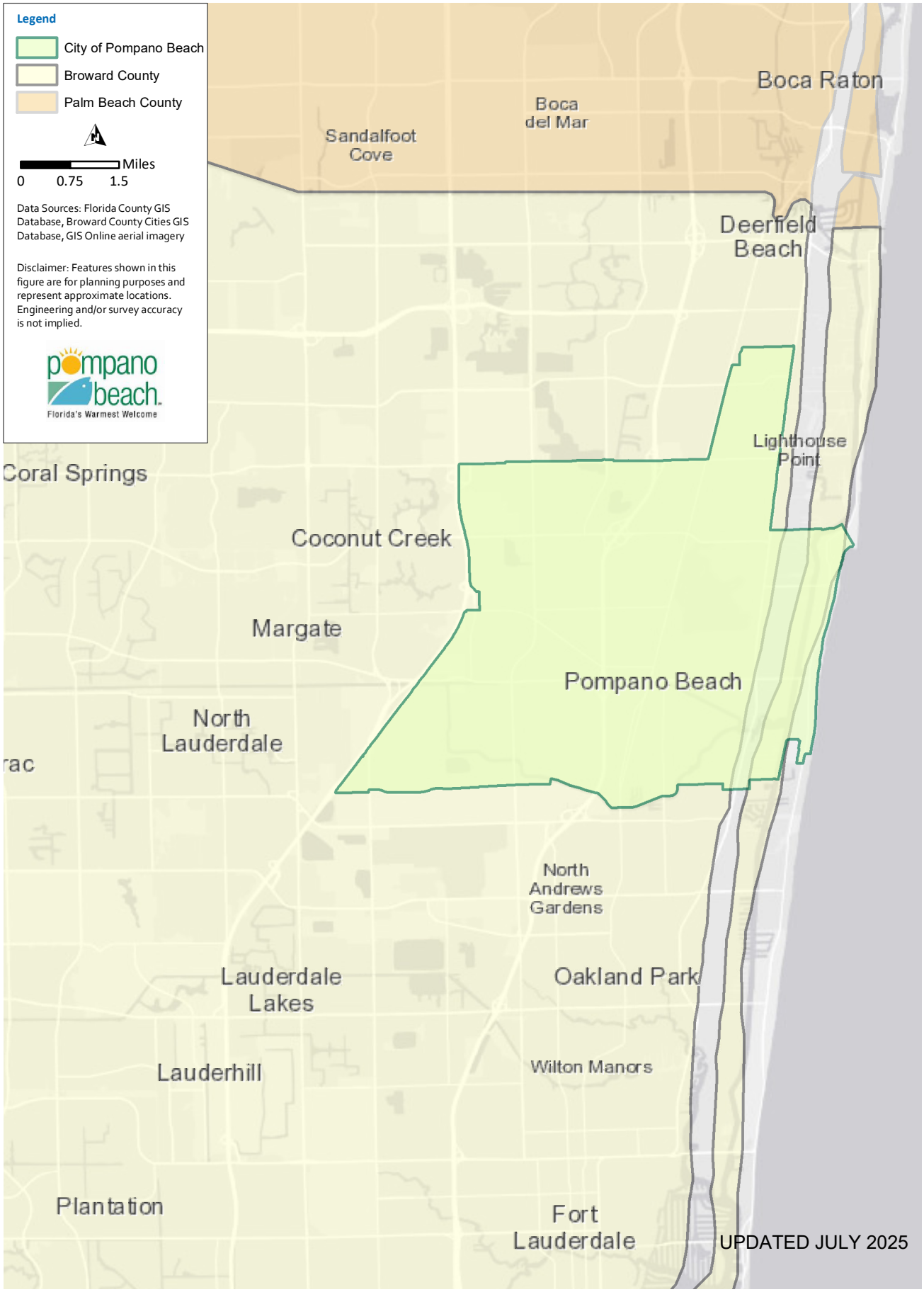


Figure 1.1 City of Pompano Beach Location and Boundary

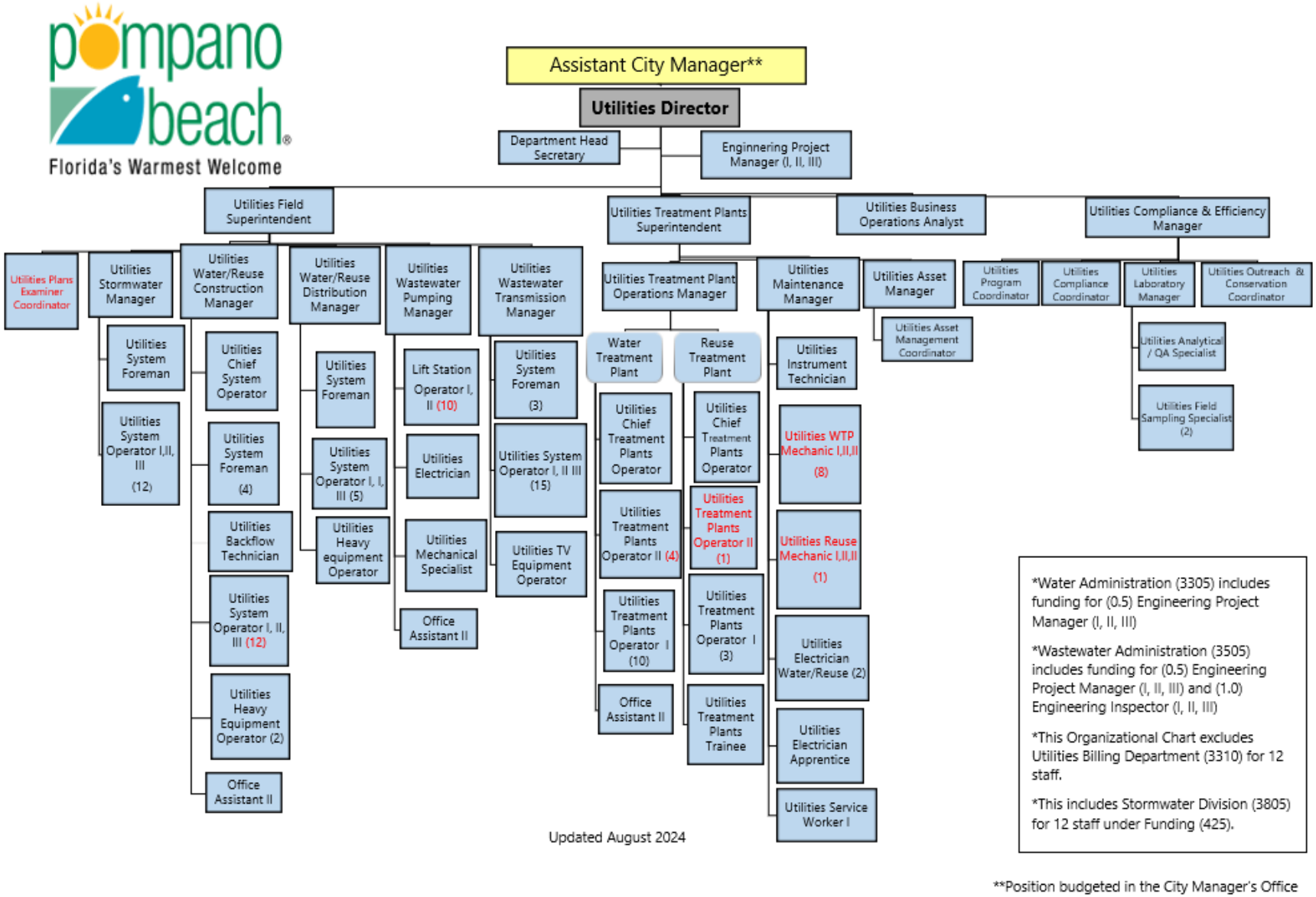


Figure 1.2 City's Organizational Chart

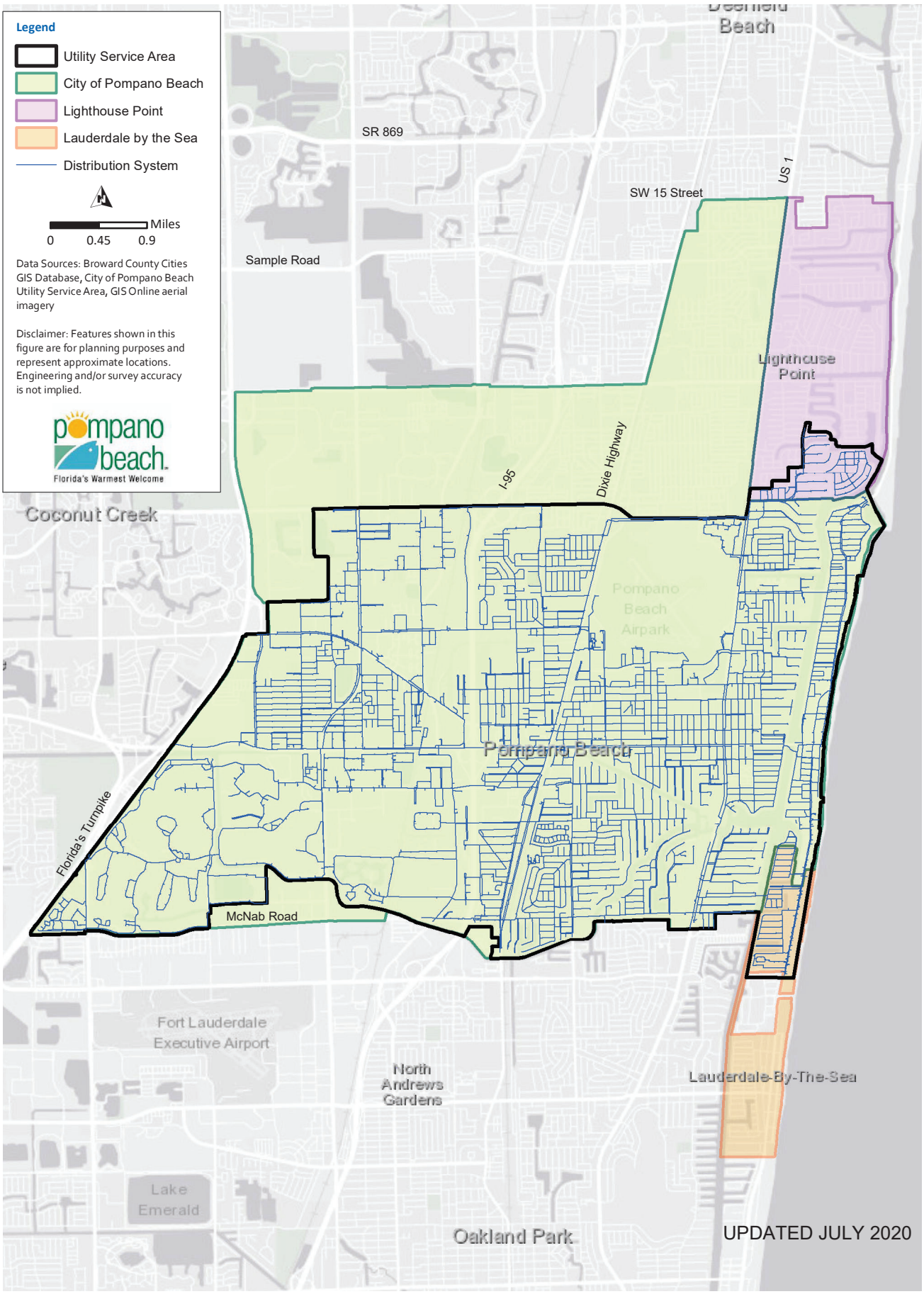


Figure 1.3 City of Pompano Beach Utility Service Area

1.3.1 Relevant Regional Issues

The City is actively addressing the regional issues identified in the 2023-2024 LEC Plan Update in their planning and upcoming capital improvement program (CIP). The major initiatives outlined below incorporate the City's commitment to sustainable water supplies and regional partnership with its neighbors in Broward County:

1. Fresh surface water and groundwater are limited; further withdrawals, although likely necessary due to the advent of regulations related to emerging contaminants, could potentially have impacts on the regional system, wetlands, existing legal uses, and saltwater intrusion. As a result, additional alternative water supplies need to be developed.
2. Construction of additional storage systems (e.g., reservoirs, aquifer storage and recovery systems) to capture wet season flow volumes will be necessary to increase water availability during dry conditions and attenuate damaging peak flow events from Lake Okeechobee.
3. Expanded use of reclaimed water is necessary to meet future water supply demands and the Ocean Outfall Legislation (OOL).
4. Expanded use of brackish groundwater from the Floridan Aquifer System (FAS) requires careful planning and wellfield management to prevent undesirable changes in water quality.
5. Integrating climate impacts and water resources planning that is coordinated with the SFWMD and other governments in South Florida. To plan and prepare for regional climate change and sea level rise, the SFWMD is conducting research and computer modeling to better predict and reduce uncertainties, analyzing vulnerabilities in the current management system, and developing effective adaptation strategies for the future.

1.3.2 Surficial Aquifer System and Limited Water Availability

The Surficial Aquifer System (SAS) in the southeastern Florida peninsula is the primary source of freshwater to residents of Broward County, Miami-Dade County, and southeastern Palm Beach County. Withdrawals from the SAS are managed by the SFWMD through the issuance of consumptive/water use permits (WUP). In order to secure and maintain a WUP, applicants, consisting of water utilities, developers, agricultural operations, and water control districts, must meet the permitting criteria of: 1) exercise reasonable and beneficial use of the resource, 2) demonstrate no adverse impact to other existing legal uses of water, and 3) assure that the use of the requested quantity of water is necessary for economic and efficient use, and is both reasonable and consistent with the public interest (including preventing harm to the environment, minimizing saltwater intrusion, protecting wetlands, and appropriate management of pollution). All water supply utilities applying for an individual permit are required to develop and implement a water conservation plan.

Water supply granted in WUPs can be used for public supply (PS) (drinking water), landscape irrigation, agricultural and nursery plant irrigation, golf course irrigation, commercial use, dewatering/mining activities, and power. In the implementation of a recovery strategy for the Everglades and Lake Okeechobee MFLs, the Governing Board of the SFWMD adopted restricted allocation areas in 2007 and 2008. In the 2018 LEC Plan Update, this mandated that new water demands requiring recharge from the Everglades system be met through the development of alternative water supply (AWS). This remained unchanged in the 2023-2024 LEC Plan Update.

The following are considered as AWS sources: saltwater; brackish water; surface water captured during wet-weather flows; sources made available through the addition of new storage capacity for surface or groundwater; water that has been reused after one or more public water supply, municipal, industrial, commercial, or agricultural uses; the downstream augmentation of water bodies with reuse water; stormwater; and any other water supply source that is designated as nontraditional for a water supply region in the applicable water supply plan. Opportunities for assistance for these AWS projects occurred in 2005 with the passage of Senate Bill 444, creating a funding and incentives program to encourage the development of AWS sources. Since this program, Florida Legislature has recognized the importance of AWS and the protection of Florida's natural systems with an investment of $230 million in AWS grants since FY2019-2020. Water supply entities are encouraged to submit proposals to the SFWMD, who would then submit a shortlist of proposals to the Florida Department of Environmental Protection (FDEP) for use of AWS grant funds. Projects funded through this program are intended to prioritize regional projects in the areas of greatest need as well as projects that provide the greatest benefit. Examples of projects funded include reclaimed water, aquifer recharge, water conservation, etc.

In response to this, the City is actively exploring alternative water supplies and intends to continue their investment in reuse and conservation and to limit or reduce withdrawals from the Eastern Wellfield. The City also intends to make optimal use of its C-51 Reservoir AWS water allocation. The withdrawals from the Eastern Wellfield have been volume-restricted due to the potential for saline water encroachment at the wellfield. The City continues to monitor the saltwater intrusion in their wellfield through the Saline Water Intrusion Monitoring Network (SWIMN). Water levels and conductance profiles are collected from each monitoring well monthly and provide information that acts as an early warning sign should the saline water intrusion front shift towards the wellfield. With this program, the City has been able to identify the saltwater interface and track its movement for the past 24+ years.

The City has engaged in developing a wellfield plan that will allow the abandonment of older wells and potential construction of newer wells further away from the saltwater interface. The City's new capital projects incorporate a comprehensive assessment of both wellfields, including evaluations of well production, specific capacity, and mechanical upgrades. One of the City's 25 wells, Well No. 3, has been abandoned due to its proximity to a new injection well. As part of the City's capital improvement plan, the City is scheduled to replace Well No. 3 with a new well in the Western Wellfield.

1.3.3 Additional Storage Systems

Lake Okeechobee is a major surface water body for storage and supply in the LEC planning area. The lake has multiple inflows from a watershed covering more than 3 million acres, including the Kissimmee River, and several outlets for flood control purposes, including: 1) the C-44 Canal and St. Lucie River to the eastern coast of Florida, 2) the C-43 Canal and Caloosahatchee River to the southwestern coast of Florida, and 3) the Everglades Agricultural Area (EAA) canals to the water conservation areas (WCA) and southeastern coast of Florida (SFWMD 2011). The amount of stored water is important to the region's natural ecosystems and developed areas. Management of surface water storage capacity involves balancing two opposing conditions: 1) drought conditions that may occur during periods of deficient rainfall, and 2) flooding that may occur due to excessive rainfall, especially during the wet season. The Lake Okeechobee MFL recovery strategy has been revised as part of the 2023-2024 LEC Plan with consideration of the Herbert Hoover Dike repairs, a new lake regulation schedule, and additional storage projects. Capturing surface water and groundwater during wet conditions for use during dry conditions increases the amount of available water. In the LEC Planning Area, water storage options include aquifer storage and recovery (ASR) and reservoirs, which are considered alternative water supplies. As of 2021, there are two active ASR wells, three idle and available for operation, and one abandoned. Several others were repurposed as FAS supply wells. Regional reservoirs (e.g., flow equalization basins and EAA A-2, C-51, and C-18W reservoirs) will attenuate stormwater, provide water quality treatment in conjunction with stormwater treatment areas, and store seasonally available water. Local agricultural reservoirs can store recycled irrigation water or collect stormwater runoff.

In 2007, the SFWMD adopted the Regional Water Availability Rule (RWA Rule), which limits Lower East Coast PS utilities' (LEC Utilities) withdrawals from the Lower East Coast Regional Water Supply System to 2006 levels to protect the Everglades and other environmentally sensitive water bodies. The RWA Rule required LEC Utilities to implement AWS sources to meet post 2006 water supply demands.

The C-51 Reservoir AWS Project (C-51 Project) is a public-private partnership (P3) developed by Palm Beach Aggregates, LLC (PBA), public utilities, and water supply authorities. The C-51 Project harvests stormwater that is currently lost to tide from the C-51 drainage canal. The C-51 Reservoir was constructed on PBA property and allows long-term surface water storage to be used to recharge the groundwater system. The environmental benefits of this project include Biscayne Aquifer recharge, reduction of harmful tidal discharges to the Lake Worth Lagoon, and supplemental discharge to the Loxahatchee River. It is estimated that the C-51 Reservoir could meet future raw water demands for portions of both Palm Beach and Broward Counties for the next 50 years.

When fully implemented, the C-51 Reservoir could store up to 61,000 acre-feet (af) of raw water. The C-51 Project has two phases: Phase 1, the initial phase which is now complete, will hold approximately 16,000 af and supply 35 million gallons per day (mgd) of raw water to participating utilities. Phase 2 will add an additional 45,000 af of storage and is currently in design.

The C-51 Project is intended for use by participating utilities as an AWS source by offsetting increased wellfield withdrawals. The term "offset" is defined by the SFWMD in the Applicants Handbook for Water Use Permit Applications (AH), June 2022, (Section 3.2.1 E) as water that, "eliminates the projected increase in volume or change in timing of withdrawals from the Waterbodies over the base condition use." Evaluation of the "base condition water use" is provided in the AH and generally includes the maximum quantity of water withdrawn from permitted sources over any consecutive 12-month period during the 5 years preceding April 1, 2006, but "in no case shall exceed the withdrawal permitted to the applicant as of April 1, 2006..."

The first phase of the C-51 Project was completed in December 2023, and the City was one of eight participating utilities. The City's WUP was modified to reflect this AWS source as a means for meeting future demands. The City's base condition water use, per their WUP, was established at approximately 659.7 million gallons (MG) per maximum month and 6,711.9 MG annually (18.4 mgd). The base condition allocation is in effect until the City receives offset water from the C-51 Project.

For the C-51 Project, the City has a capacity allocation of 2 mgd as of December 2023. This is a maximum offset available on an annual basis. The City may withdraw water above its established base condition water use up to the maximum offset from locally available water and from water stored in the C-51 Reservoir until it is fully depleted. On March 20, 2024, the City received notice from the SFWMD that WUP permit conditions have been met for the C-51 Project and it may now start withdrawals from the Western Wellfield above the established base condition water use.

The City's base condition water use allocation will expire on December 8, 2040, unless it is renewed. Between December 8, 2040, and December 27, 2065, without renewal of the base condition water use allocation, withdrawals from the Biscayne Aquifer that are offset from the C-51 Project are limited to an annual allocation of 730 MG (2 mgd) and a maximum monthly allocation of approximately 71.7 MG.

1.3.4 2008 Ocean Outfall Program and Reclaimed Water Options

In 2008, the Florida Legislature enacted an OOL which required the elimination of the use of six ocean outfalls in southeastern Florida as the primary means for disposal of treated domestic wastewater, influencing the Broward County NRWWTP facilities which serve the City of Pompano Beach. The objectives of this statute were to reduce nutrient loadings to the environment and to achieve the new use of water for water supply needs in the form of reclaimed water.

This statute requires Broward County NRWWTP to reuse at least 60 percent of the historic outfall flows by December 31, 2025, and follow the below outfall program:

- Discharge through ocean outfalls must meet either advanced wastewater treatment and management by December 31, 2018, or an equivalent reduction in outfall nutrient loading.
- A functioning reuse system that reuses a minimum of 60 percent of the facility's actual flow on an annual basis installed no later than December 31, 2025.
- Timely submission of certain progress and planning summary documents.
- Inclusion of projects that promote the elimination of wastewater ocean outfalls in SFWMD's regional water supply plans.
- State or SFWMD funding assistance must give first consideration to water supply development projects that replace existing sources or implement reuse projects to eliminate ocean outfalls.

Important considerations when developing reuse water projects are rising sea levels and increasing salt concentrations in coastal wastewater collection systems that could impact cost-effective reuse water opportunities. Related infrastructure impacts from sea level rise include accelerated physical degradation of the built environment, increased operations and maintenance (O&M), and engineering design costs to support long-term public water and wastewater capital projects. In addition, significant and strategic monitoring and financial programming have been necessary to support adaptation strategies. These options include relining the sanitary sewer collection systems, redesigning or relocating collection systems, and building additional water quality treatment capacity such as membrane filtration.

The City of Pompano Beach has also been at the forefront of progressive efforts to conserve water through reuse.

The City's reclaimed water system has been in operation for over 25 years, providing beneficial irrigation water using water that would otherwise be discharged from Broward County's ocean outfall. Implementation of the City's reuse water program brings the following benefits:

- Reduces potable water use for irrigation demands through the targeted increase in reuse connections.
- Reduces potable water usage as mandated by the SFWMD LEC Plan Update and the City's WUP.
- Protects wellfields through lower withdrawals of the City's eastern and western potable water supply wellfields, providing a salinity barrier against salt water intrusion.
- Assists BCWWS by reducing the volume of effluent that had been released through Broward County's ocean outfall.

The partnership between the City and Broward County continues today, as both entities work together to continue to expand treatment facilities and water reuse distribution to serve neighboring communities. Ongoing and future reuse expansions are planned to serve areas such as Old Pompano, Highlands, and LHP, as detailed in the City's Reuse Master Plan. Additional information on the City's reuse is provided in Chapter 4. Information on interlocal agency coordination activities is included in Chapter 6.

1.3.5 Floridan Aquifer System

The FAS is a confined aquifer system separated from the SAS by the lower-permeability sediments of the Intermediate Confining Unit. The FAS typically contains chloride concentrations greater than 1,000 milligrams per liter (mg/L). Desalination is needed before this water supply is suitable for most uses.

The use of the Upper Floridan Aquifer (UFA) began in the late 1970s. In the LEC Planning Area, the UFA provides brackish groundwater for PS, load resource (L/R), and power generation (PG) demands. From 2005 to 2021, FAS withdrawals for PS increased from 13.33 to 57.86 mgd and are expected to increase to 113.78 mgd by 2045. In the LEC Planning Area, 24 PS utilities have UFA allocations, totaling 176.01 mgd (without C-51 offset, now an alternative supply for PS as mentioned above).

Several FAS wellfields have experienced some water quality and hydrogeology degradation, but current operations have shown this can be managed by utilities through appropriate wellfield design and operating protocols. The 2023-2024 LEC Plan Update mentions the following activities:

- Increasing well spacing (more than 1,000 feet) to minimize interference effects and to reduce stress on the FAS.
- Rotating the operation of individual wells, thereby reducing overall pumping stress on the well's production zone.

- Plugging and abandoning individual wells experiencing increases in chloride concentration and replacing them with new wells elsewhere within the wellfield area.
- Reducing pumping rates at individual wells to minimize water level declines, which increase the potential for poor-quality water to enter the well's production zone from below.
- Installing monitor wells to provide early warning of the need for changes to wellfield operations to minimize upconing or lateral movement of poor-quality water.

Due to the limiting supply and significant cost of developing a Floridan Aquifer water supply and treatment system, the City intends to prioritize the development of other alternative water supplies over the use of the Floridan Aquifer. As mentioned previously, the City is actively invested in the reuse water program and the C-51 Project, which provide more direct offsets to traditional water supplies.

1.3.6 Climate Impacts

Investigations and evaluations conducted at the national, regional, and local levels have reinforced the need to plan for the predicted impacts of more frequent and severe drought, increases in tidal and storm-related flooding, and the loss of coastal wellfield capacity due to saltwater contamination. Key considerations for communities within the Southeast Florida planning areas include sea level rise, which can increase saltwater intrusion to drinking water aquifers.

The rise in sea level will alter the location and shape of the saltwater interface potentially generating or increasing intrusion into coastal aquifers. Analysis and the use of the ECSM model by SFWMD will determine the potential impacts of sea level rise on utility wellfields. The 2023-2024 LEC Plan Update reports increased monitoring that has helped accurately characterize and measure aquifer conditions, saltwater movement, and sea level rise. The City currently monitors a range of parameters at its wellfields in accordance with this measure.

The City is also an active participant in the South Florida Regional Climate Change Compact (Compact) to support initiatives focused on adapting to rising sea levels. The City has enacted several recommendations by the Compact in disciplines such as agriculture, energy and fuel, natural systems, public outreach and policy, risk reduction and emergency management, sustainability, and transportation. The City's implementation of the Compact's recommendations for water supplies are summarized as follows:

- WS-01: Fostering innovative water management.
- WS-03: Planning for future water supply.
- WS-04: Coordinating saltwater intrusion mapping.
- WS-05: Inventory of water and wastewater infrastructure.
- WS-10: Integration of surface and groundwater impacts in planning.
- WS-12: Integration of hydrologic and hydraulic models.
- WS-15: Fostering water management research.
- WS-16: Expanding partnerships and resources for innovation.
- WS-17: Advancing capital projects.
- WS-20: Supporting the Comprehensive Everglades Restoration Plan.
- WS-21: Expanding surface water storage.

CHAPTER 2 WATER SERVICE AREA

The City of Pompano Beach jurisdictional boundaries differ from the utility service area boundaries, as mentioned in Chapter 1. The City's water service area, which includes customers outside of the City limits, is served by a network of transmission and distribution piping within 19 square miles. The City supplies a portion of the area within its political boundary as well as portions of adjacent municipalities such as the northern portion of LBTS and the southern tip of the Town of LHP. The general area extends from the Atlantic Ocean to Florida's Turnpike and from Copans Road to McNab Road. The remainder of the City outside of the service area receives potable water from BCWWS Districts 1 and 2. Figure 1.3 delineates the boundaries of the City's Service Area.

This WSFWP addresses the following service areas:

1. Areas served by City facilities within the City limits.
2. Areas served by City facilities that are outside of the City limits (i.e., portions of the City of LHP and the Town of LBTS).
3. Areas within the City limits served by BCWWS (using information contained in the 2020 BC WSFWP).

The City does not plan to expand its water service area. Although the wellfield and water treatment facility for the Town of Hillsboro Beach are located in the City, they do not serve areas within the City limits. Therefore, the Town of Hillsboro Beach Water Supply Facilities Work Plan is not discussed or referenced in this report.

2.1 Service to Other Local Government Jurisdictions

The City is responsible for planning, financing, constructing, operating and maintaining the utilities and public water supply systems for the southern part of the City of LHP and the northern part of the Town of LBTS, as depicted in Figure 1.3. The City directly supplies water to these customers through its distribution system network.

2.2 BCWWS District 1 and 2 Service Areas

BCWWS District 1 and 2 supply potable water to portions of the City that are not within the utility service area. These areas can be categorized as follows:

1. Northern Residential and Industrial Zone: The majority of this zone is bounded by the City boundary to the north, Copans Road to the south, Federal Highway to the east, and the City boundary to the west. Broward County Department of Transportation, Blount Road Utility System, and the Alpha 250 System industries are also part of this zone. In addition, a small area delimited by Copans Road to the north, 21st Street to the south, Dixie Highway to the east, and North Cypress Road to the west, is part of this zone. This zone is served by BCWWS District 2.
2. Southern Zone: This zone is bordered in the north-south direction by the C-14 Canal and West McNab Road, Dixie Highway to the east, and southwest 36th Avenue to the west. This zone is served by BCWWS District 1.

The City residents served by BCWWS are direct customers of BCWWS. A large portion of BCWWS water service area in the City was annexed to the City during the last 25 years. However, future annexations are not anticipated.

In addition, it should be noted that BCWWS does not plan to expand water service to other areas within the City.

BCWWS is responsible for the planning, financing, construction, maintenance, and operation of the water supply facilities within their water service areas. Although the City is ultimately responsible for the water supply within its area of jurisdiction, the water supply plan for the areas within the City limits served by BCWWS is already incorporated in the 2020 BC WSFWP. The 2020 BC WSFWP accounts for the water demand for the areas served by BCWWS within the City. Therefore, only a brief description of the 2020 BC WSFWP for the areas served by BCWWS in the City is provided under this WSFWP.

See Appendix A for the 2020 BC WSFWP.

The City has six interconnections with other utilities as follows: one with Margate, two with Broward County District 2A, and three with the City of Fort Lauderdale.

2.3 Private Suppliers

Private suppliers are those within the City's service area for which all or a portion of their demand is supplied by non-municipal water. These service suppliers hold water use irrigation permits, major general water use irrigation permits, individual permits, or major WUPs granted by SFWMD. Permits are issued to allow users to withdraw a specified amount of water, either from the ground (aquifers), canals, lakes, or rivers. This water is typically used to irrigate golf courses, crops, nurseries, residential landscaping, or for industrial uses. There are no self-supply users withdrawing water from the Biscayne Aquifer for domestic/potable consumption use. Individual users withdrawing within the City and their specific permitted use are identified in the map and the table of Appendix B. There is no anticipated future water demand from current self-supply systems (private wells) identified within the City's water service area that would be served in the future by the Pompano Beach potable distribution system. However, there are private users of groundwater for irrigation that are located within the existing City reuse application zone. It is presumed that those users could replace their allocated volume with City's reuse water. The City does not have any involvement in the planning, financing, construction, or operation of the facilities of self-supplied users except for the City-owned community parks and green space, therefore, the presumed option to connect the private users of irrigation groundwater to the reuse system may be further investigated by the City through the SFWMD. The resulting offset in private use of Biscayne aquifer due to conservation may be credited to the City's WUP in future years. The City Parks and Recreation Department is responsible for obtaining the WUP for pool and maintenance uses within its community parks.

CHAPTER 3 EXISTING WATER SUPPLY SYSTEM

3.1 Water Supply Facilities

The potable water supplied to customers within the City's service area originates from the Biscayne Aquifer. The Biscayne Aquifer occurs near the land surface in most of the City, and is used by all water use categories, as it is the primary source of fresh groundwater in the LEC Planning Area. Groundwater from the Biscayne Aquifer is used by the City and BCWWS at their water treatment plants (WTP).

3.1.1 City Wellfields

The City utilizes the Biscayne Aquifer system for public water supply use under consumptive WUP No. 06-00070-W. The WUP was reissued on December 8, 2020, and will expire on December 27, 2065. WUP documents are included in Appendix C. The WUP regulates raw water supplies to the City's WTP, via 25 wells. The original wellfields had a 66.5 mgd initial design capacity. The current active capacity is approximately 60.9 mgd.

The 25 wells are distributed in two Biscayne Aquifer wellfields, the Eastern Wellfield (also known as the Airport Wellfield) and the Western Wellfield (also known as the Palm Aire Wellfield). The Eastern Wellfield is located near the City's municipal airport and WTP, and the Western Wellfield is located around the Palm-Aire development, as shown in Figure 3.1. A summary of well capacities and status is provided in Table 3.1.

The City's raw water transmission system capacity was evaluated using hydraulic modeling in 2006 and was reevaluated in 2020 upon WUP modification. The model results indicated that the raw water transmission system is sufficient for operation of the existing well facilities, and the wells can supply the raw water flow for the treatment plant's current maximum permitted capacity (50 mgd).

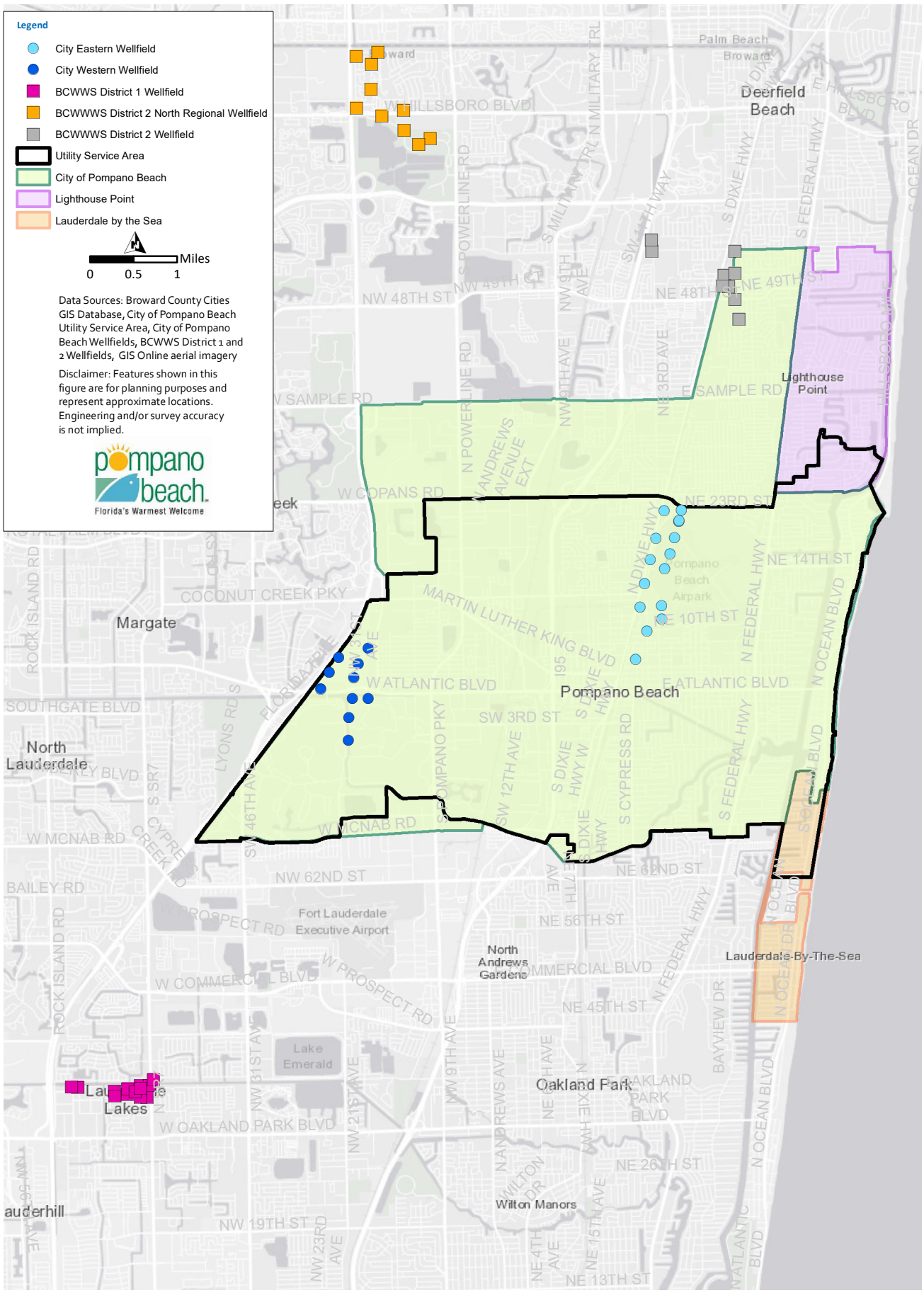


Figure 3.1 City of Pompano Beach and BCWWS District 1 and 2 Wellfields

Table 3.1 Well Capacity Summary Table

	Well No.	Year Constructed	Design Capacity (gpm)	Casing Diameter (inch)	Cased Depth (feet)	Total Depth (feet)
Eastern Wellfield	2	1952	1,500	16	ND	136
	3(1)	1950	0	16	ND	107
	4	1955	1,800	16	ND	140
	5	1958	1,500	16	ND	108
	6	1958	2,200	14	100	156
	7	1960	1,500	16	90	90
	8	1961	1,500	16	90	90
	9	1963	1,500	16	97	131
	10	1961	1,800	16	93	113
	11	1964	1,500	16	88	127
	12	1967	1,500	16	90	123
	13	1968	1,800	16	115	115
	14	1969	1,500	16	114	114
	15	1972	2,000	18	115	140
	16	1972	2,000	18	113	130
	Subtotal	(gpm) (mgd)	25,100 36.14			
	Subtotal Current Active	(gpm) (mgd)	25,100 36.14			
Western Wellfield	3R(2)	-	1,500	16	87	107
	17	1981	2,400	16	76	150
	18	1981	2,400	16	72	130
	19	1981	2,100	16	78	158
	20	1981	2,100	16	80	154
	21	1981	1,600	16	80	153
	22	1981	2,100	16	79	153
	23	2002	2,100	16	80	153
	24	2002	2,100	16	80	153
	25	2002	2,100	16	80	153
	26	2002	2,100	16	80	153
	Subtotal	(gpm) (mgd)	21,100 30.38			
	Subtotal Current Active	(gpm) (mgd)	21,100 30.38			

	Well No.	Year Constructed	Design Capacity (gpm)	Casing Diameter (inch)	Cased Depth (feet)	Total Depth (feet)
System Total	(gpm) (mgd)	46,200 66.5				System Total
System Current Active	(gpm) (mgd)	42,300 60.91				System Active

Updated July 2025.

Notes:
(1) Well is abandoned.
(2) Replacement of Well No. 3; all permit conditions remain the same.
gpm – gallons per minute

3.1.1.1 Eastern Wellfield

The Eastern Wellfield is bounded by Dixie Highway, the City's Airport, Copans Road, and Atlantic Boulevard. The wells in the Eastern Wellfield were constructed between 1950 and 1972. There are 15 wells (Nos. 2 through 16) with an initial total design capacity of approximately 36.14 mgd. Well No. 3 has been abandoned, and Well No. 8 is currently inactive, decreasing the total design capacity to 33.98 mgd. Well No. 3 has recently been abandoned due to the proximity to the new injection well. The City plans to replace Well No. 3, with proposed Well No. 3R, which will be located in the Western Wellfield. This project is included as part of the City's CIP.

The withdrawals from the Eastern Wellfield have been volume restricted due to the potential for saline water encroachment at the wellfield. The Eastern Wellfield has a SWIMN constructed in 1996/1997 and is comprised of a total of 10 wells that provide a total of 18 monitoring locations and sampling results:

- Eight screened wells monitored at two depths, shallow (90 feet) and deep (180 feet).
- Production Well No. 1 was abandoned for potable supply however continues to be used as part of the SWIMN.
- Production Well No. 8, also monitored as part of the SWIMN.

Water levels and conductance profiles are collected from each well, monthly. Records from the SWIMN act as an early warning sign should the saline water intrusion front shift towards the wellfield. Quarterly reports are submitted by the City to the SFWMD summarizing individual well pumpage and saline water intrusion data as required by Limiting Condition 34 of the City's SFWMD WUP. As stated in the 2023-2024 LEC Plan Update, the SFWMD uses data collected on the east coast of Florida to evaluate the extent of seawater encroachment into aquifers along the South Florida coastline and map the saltwater interface. The water quality and water levels are monitored through monthly sampling. With this program, the City has been able to identify the saltwater interface and track its movement for the past 25 years.

According to the 2020 WUP Report (included as part of WUP documentation in Appendix C), conductance data from the 18 monitoring locations located in the Eastern Wellfield has shown that salinity has remained stable since 2006. However, if data shows an increasing trend in chloride concentration upon a correlating increase in withdrawals from the Eastern Wellfield, subject to Limiting Conditions of the WUP, the Permittee shall submit a saline water intrusion action plan to the SFWMD. The potential for saline intrusion or upconing to occur as a result of the withdrawal of the permitted allocation is considered minimal.

3.1.1.2 Western Wellfield

The Western Wellfield is located just east of Florida's Turnpike with wells located north and south of Atlantic Boulevard. The 10 wells (Nos. 17 through 26) found in this wellfield account for a total capacity of 30.38 mgd. The firm capacity is estimated to be 26.93 mgd (with the largest well unit, Well No. 17, out of service). The wells on the north side of Atlantic Boulevard were constructed in 1981, and the wells on the south side were constructed in 2002. These wells feed the nanofiltration membrane softening system at the WTP.

The Western Wellfield has two monitor wells. Water level and water quality data are collected from the monitor wells on a monthly basis and shall continue to be submitted to the SFWMD quarterly. According to the 2020 WUP Report (included as part of WUP documentation in Appendix C), the allocated raw water use is not expected to cause further net inflow of groundwater from the saline water source toward the withdrawal point. In addition, withdrawals above the base condition will be offset with water from the C-51 Project. Therefore, the potential for saline intrusion or upconing to occur as a result of the withdrawal of the permitted allocation is considered minimal.

3.1.2 City Consumptive Use Permit Conditions

The City is currently operating under WUP No. 06 00070 W, which was reissued by the SFWMD on December 8, 2020. This permit will expire on December 27, 2065. The City is required to submit routine data to the SFWMD throughout the lifetime of the permit, including items such as pumping and withdrawal quantities, apply for permits prior to construction, repair or abandonment of wells, providing calibration and re-calibration data, etc.

The WUP allows a total annual allocation of 7,200 MG of groundwater from the Biscayne Aquifer to supply raw water for public water supply. This corresponds to a daily average of approximately 19.7 mgd. The permit has a total maximum monthly allocation of 690 MG.

A permit condition in the WUP limits the City's annual allocation from the Biscayne Aquifer to an annual base condition allocation of 6,711.90 MG (659.69 MG maximum month), which expires on December 8, 2040. Withdrawals from the Biscayne Aquifer are limited to the base condition allocation until the City receives offset water to prevent a net increase in volume or cause a change in timing on a monthly basis of surface and groundwater withdrawn from the Lower East Coast Everglades Waterbodies. The base condition allocation permit requirement has been met through the City's participation in the C-51 Reservoir Project and the City may utilize its total annual allocation of 7,200 MG of groundwater from the Biscayne Aquifer as of December 2023.

The WUP further restricts withdrawals from the Biscayne Aquifer by wellfield as follows:

- The Eastern Wellfield has a permitted annual allocation of 2,697 MG (approximately 7.4 mgd). Monthly withdrawals are limited to 186 MG during the dry season (November 1 to May 31). From June 1 through October 31 of each year, monthly withdrawals from the Eastern Wellfield cannot exceed 279 MG.
- The Western Wellfield has a permitted annual allocation of 4,015 MG (approximately 11 mgd) and a maximum month allocation of 394.8 MG. The Western Wellfield does not have seasonal withdrawal limitations like the Eastern Wellfield. However, the C-51 Project, discussed in detail below, only applies to withdrawals from the Western Wellfield. Permit conditions have now been met that allow the annual allocation for the Western Wellfield to be increased to 4,503.0 MG annually (approximately 12.34 mgd) and with a maximum monthly allocation of 495.3 MG.

3.1.3 BCWWS Districts 1 and 2 Wellfields

The existing BCWWS Districts 1 and 2 water supply system is comprised of three SAS wellfields, District 1 Wellfield, District 2 Wellfield, and North Regional Wellfield. District 1 Wellfield is located near the District 1 WTP in Lauderdale Lakes, District 2 North Regional Wellfield is located in Deerfield Beach, and District 2 (2A) Wellfield is located in Pompano Beach. Figure 3.1 shows the BCWWS Districts 1 and 2 Wellfields. The BCWWS wellfields have a total rated capacity of approximately 70 mgd, as shown in Table 3.3. However, their permitted withdrawal limits, as established by SFWMD, are much lower.

Two upper FAS test wells have been constructed near District 1 to develop the raw water treatment method appropriate for the FAS water quality. Use of the FAS has not yet been evaluated for District 2. These FAS wells have been constructed as possible alternative water supply wells in the future. Per the 2023-2024 LEC Plan Update, BCWWS District 2A is proposing plans to add FAS wells and expand their WTP by adding 6 mgd of RO treatment as a backup to the C-51 Reservoir offset water.

3.1.4 BCWWS Consumptive Use Permit Conditions

The BCWWS District 1 Wellfield operates under SFWMD WUP No. 06-00146-W, issued on September 15, 2020, with an expiration of December 27, 2065. The District 1 WUP allows a maximum annual withdrawal of 3,989 MG (10.93 mgd), with a maximum month allocation of 362.38 MG from the Biscayne Aquifer and Upper FAS. BCWWS District 2 Wellfield, located in eastern Pompano Beach, operates under SFWMD WUP No. 06-01634-W, issued October 29, 2020, with an expiration date of December 27, 2065. The WUP consists of allocation of raw groundwater from the Water Treatment Plant 2A wellfield and the North Regional Wellfield and allows a maximum annual withdrawal of 6,356 MG (17.41 mgd), with a maximum month allocation of 580.55 MG from the Biscayne Aquifer and Upper FAS. Per the 2023-2024 LEC Plan Update and the above-mentioned permits, BCWWS District 1 has gained an alternative water supply capacity of 1 mgd from Phase I of the C-51 Reservoir Project and District 2A has gained a capacity of 2 mgd.

3.2 Existing Water Treatment, Disposal, Storage, and Pumping Facilities

The components of the City's water system include water treatment, finished water storage, pumping, and distribution network, as depicted in Figure 3.2.

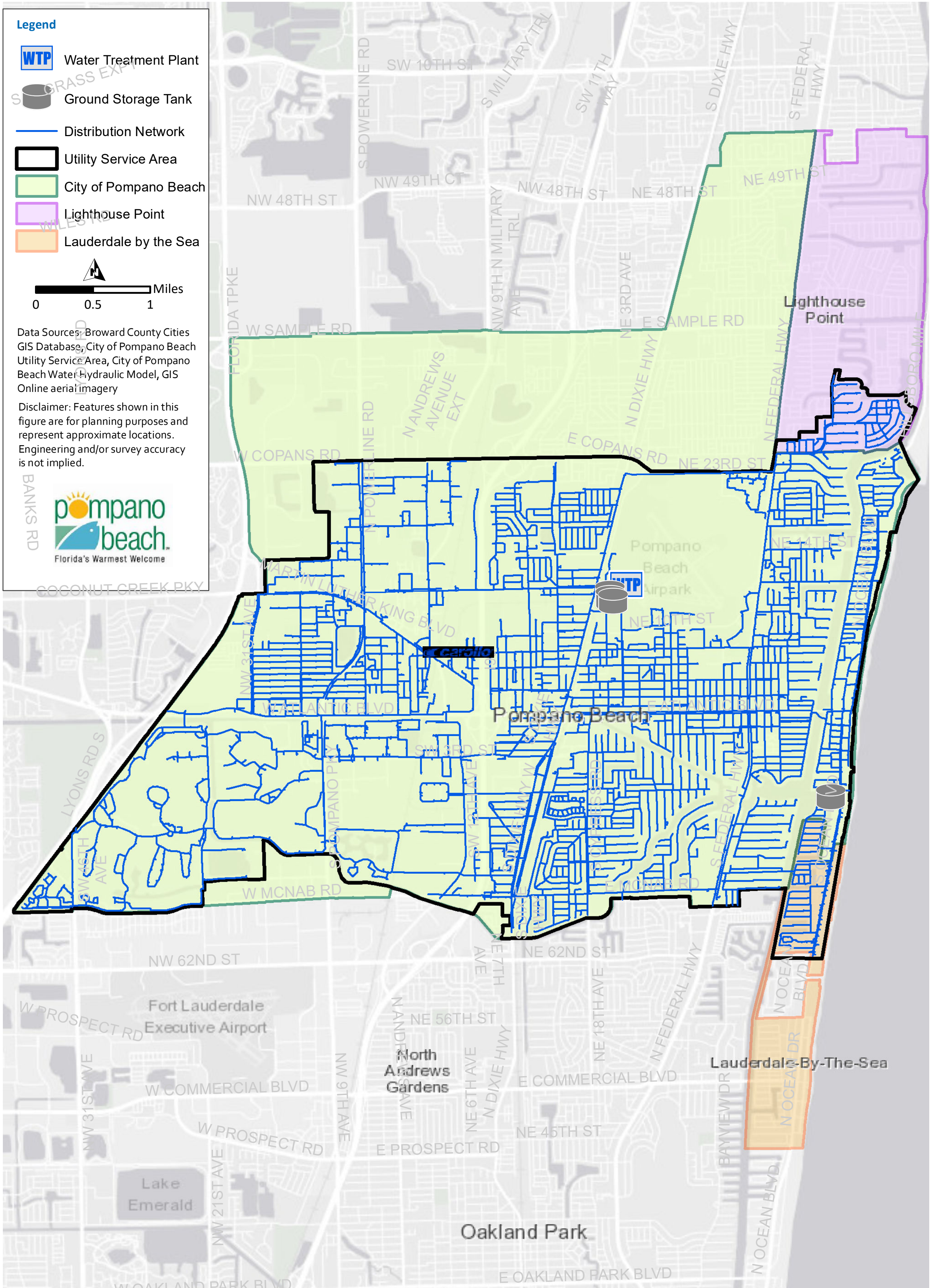


Figure 3.2 Location of Water System Facilities and Distribution System

3.2.1 City Water Treatment Facilities

The City's WTP is located north of NE 12th Street between NE 3rd Avenue and NE 5th Avenue in Pompano Beach. The treatment plant has two parallel treatment processes - conventional lime softening and nanofiltration membrane softening, with a total design capacity of 50 mgd.

Figure 3.3 depicts the process flow diagram for the two treatment processes at the existing WTP.

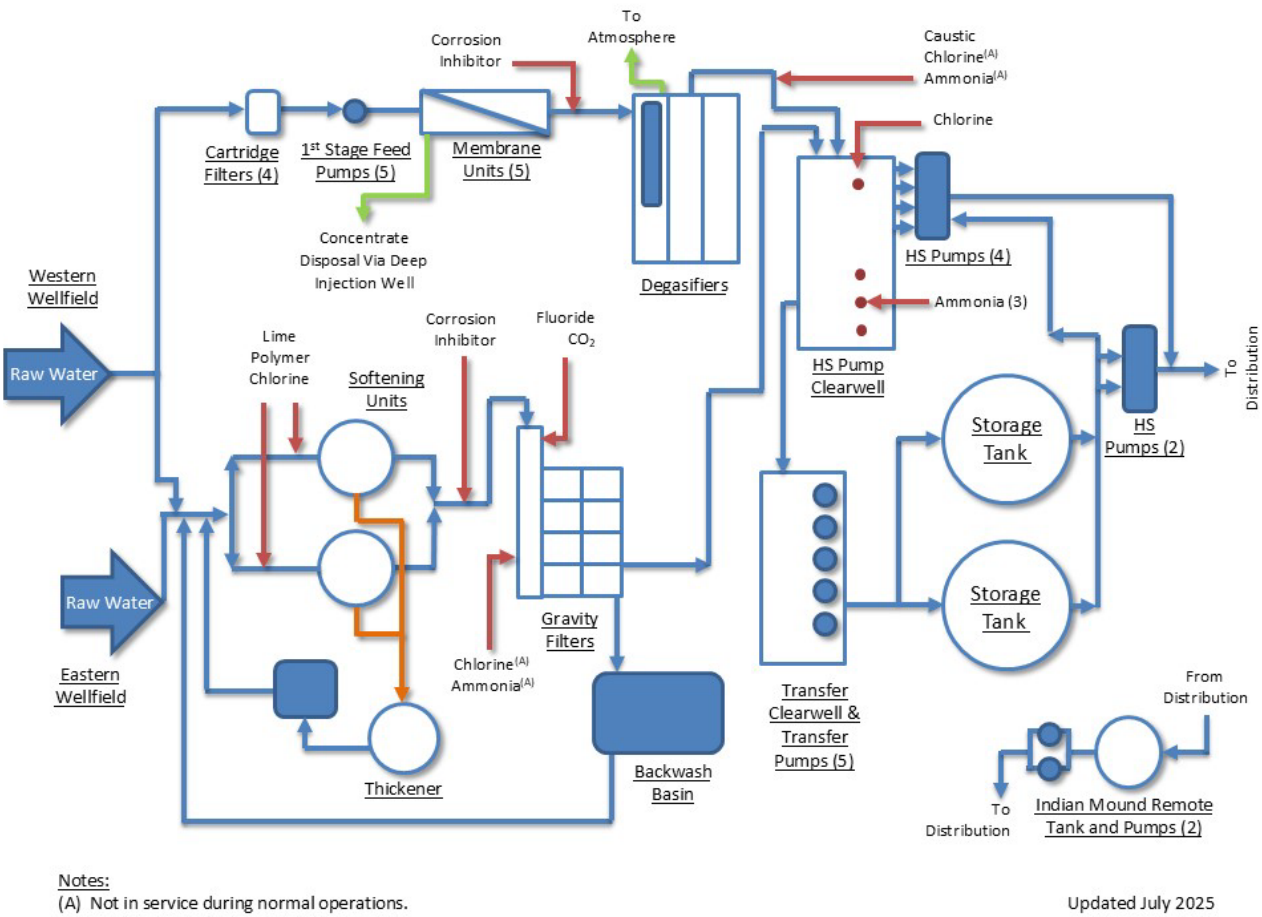


Figure 3.3 Overall WTP Process Flow Diagram

3.2.1.1 Lime Softening Water Treatment Plant

The lime softening WTP receives raw water from both the Eastern and Western Wellfields. A majority of the lime softening treatment basins and piping were constructed in the 1970s or 1980s. Over the years, upgrades to critical systems were constructed to extend the life of the treatment components. With a rated design capacity of 40 mgd, it includes a single sludge thickener basin and vacuum filters for lime sludge thickening.

The raw water enters one of two solids contact softening clarifiers, then moves to multimedia gravity filters. Carbon dioxide is used to lower the pH following softening. The filtered water flows to a blending clearwell for 4-log disinfection with chlorine and ammonia. Depending on demand, the finished water is either sent to the distribution system or to onsite storage tanks. The sludge produced is hauled offsite for reuse by the golf course. The conventional lime softening method achieves approximately 97 percent production efficiency.

3.2.1.2 Nanofiltration Membrane Process

The nanofiltration membrane process receives raw water from the Western Wellfield. It has a rated capacity of 10 mgd and consists of prefilters, membrane units, and degasifier units. It started operation in October 2002. The membrane process is heavily reliant on various chemical processes with a production yield of roughly 80 percent.

The nanofiltration membrane softening facility uses a semi-permeable barrier to separate high quality water (permeate) while rejecting the passage of dissolved and suspended solids (concentrate). This treatment process includes cartridge filtration, nanofiltration, and degasification. As of January 2020, chemical pretreatment with sulfuric acid and anti-scalant is no longer added to the process. The degasified membrane permeate is post-treated with chlorine and ammonia. As of July 1, 2025, per First Quarter State Regulation Rule, fluoride is no longer used. Sodium hydroxide (caustic) is occasionally used if the pH drops low or if the lime plant is offline.

The effluent or permeate is discharged to the clearwell where the effluent from the membrane is blended with the effluent from the lime softening process to produce finished water. Depending on demand, the finished water is either sent to the distribution system or to onsite storage tanks.

The membrane concentrate (which is a non-hazardous, byproduct of the nanofiltration membrane softening treatment process) is disposed of by means of a deep injection well located at the WTP. The concentrate is also permitted for emergency disposal to Broward County's NRWWTP; however, it is limited to two membrane units, or trains, due to pipe size, which would temporarily reduce production to approximately 4 mgd when the backup disposal is used.

3.2.1.3 Treatment Common to Lime and Membrane Softening Processes

All disinfection occurs in a single blending clearwell/contact chamber, which provides 4-log contact time for both treatment plants. The facilities include one transfer clearwell and high service pump clearwell, as well as two 5.0 MG prestressed concrete ground storage tanks. In addition, a corrosion inhibitor is injected into each water stream prior to the clearwell.

3.2.1.4 PFAS

Per- and polyfluoroalkyl substances (PFAS) are a large group of synthetic fluorinated organic chemicals that include perfluorooctanoic acid (PFOA) and perfluorooctane sulfonate (PFOS). The unique characteristics of PFAS make them exceptional for consumer and industrial products, with thousands of these chemicals registered globally. However, these properties also make them highly soluble, mobile, and recalcitrant to chemical and biological treatment processes employed in drinking water, wastewater, and potable reuse. Accordingly, PFAS have been detected widely in drinking water and the environment.

In April 2024, the United States Environmental Protection Agency (USEPA) announced a final National Primary Drinking Water Regulation for six PFAS substances with compliance required 5 years after the rule appears in the Code of the Federal Register. The legally enforceable maximum contaminant levels (MCL) for six PFAS in drinking water are:

- PFOA and PFOS as individual contaminants at 4 nanograms per liter (ng/L) each.
- Pperfluorohexanesulfonic acid (PFHxS), perfluorononanoic acid (PFNA), and hexafluoropropylene oxide dimer acid (HFPO-DA [GenX]) as individual contaminants at 10 ng/L.
- PFBS, PFHxS, PFNA, and HFPO-DA (GenX) as a PFAS mixture at a Hazard Index (HI) limit of 1.0.

The USEPA is also publishing health-based, non-enforceable maximum contaminant level goals (MCLG) for these six PFAS. The final rules requires public water systems to:

- Monitor for these PFAS by 2027.
- Notify the public of the levels of these PFAS by 2027.
- Reduce the levels of these PFAS in drinking water if they exceed the standards by 2029.

The City is committed to delivering reliable and sustainable water services that meet the needs of its customers. The City has been proactive in the steps it has taken to address PFAS in its drinking water, including testing facilities for some of these and other contaminants beyond the required testing to understand what steps need to be taken for current and proposed future regulations.

The City is conducting research to determine the best course of technology for removal of these chemicals and is taking part in a lawsuit against the manufacturers of these chemicals to assist with offsetting the cost of new treatment facilities to remove PFAS.

The City is planning to both expand its existing nanofiltration (NF) membrane WTP and to construct a new NF membrane WTP to replace the existing aged conventional lime softening plant. This effort corresponds to a CIP project named "Emerging Contaminants" listed in the City's five-year alternative water supply CIP (Table 7.4). The City's CIP currently anticipates funding costs of this project as follows: approximately $30 million (to expand the existing NF membrane WTP) with funds from the Series 2024 Bonds and distributed in FY 2025 and FY 2026, $41.5 million from the proposed future water and wastewater revenue bonds, and the remaining $1.5 million with revenues from rates and/or reserve funds. It shall be noted, however, that SFWMD has recognized but not yet considered in its regional planning efforts according to the Lower East Coast Water Supply Plan Stakeholder Meeting No. 3, hosted by the SFWMD on July 12, 2024. An additional water supply may be needed in the future by utilities due to the planned increase in the use of membrane technologies (due to their lower yield as defined above) to address PFAS in the future. See Chapter 5 - Data and Analysis for the City's projected raw water supply need as a result of the regulatory need to treat PFAS.

3.2.1.5 Disposal Facility: Injection Well

The City utilizes a Class I injection well system (IWS) for disposal of brine waste for the nanofiltration process. The IWS at the WTP is permitted for 6.9 mgd (Permit No. 0167214-009-UO/1X). The permit was issued on October 25, 2022, and expires on October 25, 2027. The permit requires the City to demonstrate mechanical integrity of the IWS at least once every 5 years. The mechanical integrity test was completed in February 2025. Alternative (backup) disposal is via the sanitary sewer to Broward County's NRWWTP.

It is anticipated that the permit will be reissued through the ordinary permitting process. The City will be required to complete a renewal application identifying historic and projected volume for the next 10-year period, waste stream characterization analysis and processes, monitoring results, and documentation of mechanical integrity tests by October 25, 2027.

3.2.2 City Water Storage Facilities

There is one blending clearwell/contact chamber where all disinfection occurs. Disinfection occurs before and inside the clearwell after the filters. Water from the nanofiltration membrane WTP is blended with the conventional lime softening WTP into the clearwell. The water treatment plant has two ground storage tanks designed to buffer the water production process from the water distribution system and to store finished water to cover operational demand peaks and emergency finished water needs. In addition to the water treatment plant storage, the City maintains one offsite finished water storage facility at the Indian Mound Park, close to the Intercoastal Canal in the southeastern part of the service area. The offsite facility is comprised of a ground storage tank and high service pumps that assist with sustaining peak hour pressure and fire flow requirements. Table 3.2 lists the City's storage capacity.

Table 3.2 Summary of City Finished Water Storage Facilities

Location	Description	Capacity (MG)
Water Treatment Plant	Clearwell	2.0
Water Treatment Plant	Ground Storage Tanks	10
Indian Mound Remote Facility	Ground Storage Tank	1.0
	Total	**13**

Updated August 2025.

3.2.3 City Pumping/Booster Stations

The City WTP is equipped with two high service pump (HSP) stations. One houses four HSPs, three of which are equipped with variable frequency drives (HSP 2, HSP 3, and HSP 4). The other pump station houses another two HSPs. There are a total of six HSPs at the City WTP, ranging in size from 150 to 600 horsepower (hp). The high service pumping system has a firm capacity of 37,500 gpm, or 54 mgd.

The City also has a remote storage and pumping facility located at Indian Mound ground storage tank in the southeast portion of the distribution system. The Indian Mound site has a pump station with two constant speed driven pumps. This remote facility is used to maintain level of service (LOS) pressure during high demand events and under fire flow conditions. Table 3.3 summarizes the pumping capabilities at the City WTP and the Indian Mound site.

Table 3.3 Summary of High Service Pumps

HSP Station	Quantity of Pumps	Pump Size	Rated Total Dynamic Head (feet)	Rated Flow (gpm)
WTP	1	150 hp	160	2,500
	2	450 hp	140	7,500
	3	600 hp	150	10,000
			Total Installed Capacity at WTP	**47,500**
			Total Firm Capacity at WTP	**37,500**
Indian Mound	2	150	180	2,300
			Total Installed Capacity at Indian Mound	**4,600**
			Total Firm Capacity at Indian Mound	**2,300**
			Overall Total Installed Capacity in the City	**52,100**

Updated August 2025.

3.2.4 BCWWS Water Treatment Facilities

The BCWWS water utility system is divided into three service areas: Districts 1, 2, and 3, which collectively cover approximately 43 square miles. The three service areas are independently operated but are supported by BCWWS Operations as a single entity. The County has two WTPs, located in District 1 and District 2, with a combined permitted water treatment capacity of 46 mgd.

In District 1, raw water is treated at the District 1 WTP-1A located at 3701 N. State Road 7 in the City of Lauderdale Lakes prior to distribution to retail customers. The plant was expanded in 1994 to its current capacity of 16.0 mgd to treat Biscayne Aquifer raw water using lime softening treatment.

In District 2, the raw water is treated at the District 2 WTP located at 1390 N.E. 51st Street in the City of Pompano Beach prior to distribution to BCWWS retail customers and the City of Coconut Creek. The District 2 WTP was expanded in 1994 to its current capacity of 30.0 mgd to treat Biscayne Aquifer raw water using lime softening treatment.

District 3 is divided into two geographically separate sub-districts: District 3A and 3BC. The County purchases bulk treated water primarily from the City of Hollywood interconnect and distributes through the County's distribution system. Sub-District 3A has interconnects with the City of Hollywood, as its primary water supply, and with the Cities of Fort Lauderdale and Dania Beach for emergency water supply. Sub-District 3BC has interconnects with the City of Hollywood, as its primary water supply, and the cities of Pembroke Pines and Miramar for emergency water supply.

Table 3.4 summarizes BCWWS water system facilities and capacities.

Table 3.4 Summary of BCWWS Water System Facilities and Capabilities

Description	District 1	District 2	District 3	Total
Production Wells	9	7	0	16
Wellfield Design Capacity (mgd)	23.5	27.1	0	50.6
Wellfield Firm Capacity (mgd)(1)	19.6	21.3	0	40.9
Treatment Plants	1	1	0	2
Current Plant Capacity (mgd)	16	30	0	46
Service Area (square miles)	11.9	14.8	14.3	41.0

Updated July 2020.

Notes:
(1) Firm Capacity refers to the available capacity with the largest well in each district out of service.
Source: 2020 Broward County 10-Year Water Supply Facilities Work Plan, April 2020.

3.2.5 BCWWS Finished Water Storage Facilities

Finished water storage facilities for BCWWS Districts 1 and 2 water services consist of onsite and remote storage facilities. The total storage capacities for BCWWS facilities is 15.6 MG. District 1 has an additional clearwell volume of 0.65 MG, which can be pumped directly into the distribution system if needed. The BCWWS Districts 1 and 2 storage facilities are summarized in Table 3.5.

Table 3.5 BCWWS Finished Water Storage Facilities

District	Description	Capacity (MG)
District 1	Two onsite storage tanks and three remote storage tanks	7.1
District 2	Three onsite storage tanks	8.5
	Total	**15.6**

Updated July 2020.

3.3 Water Transmission/Distribution Facilities

3.3.1 City Water Distribution System

The City's potable water distribution system is comprised of approximately 290 miles of pipe varying in size from 2 to 36 inches in diameter, with the most common pipe size being 6-inch diameter. A few hundred feet of 42-inch and 12-inch pipes connect the ground storage tanks with the HSP stations. Figure 3.2 shows the City-owned water transmission and distribution system.

Roughly 24 percent of the transmission and distribution network is polyvinyl chloride (PVC) pipe. A small and decreasing percentage of the pipes in the system are asbestos cement, commonly known as Transite (after the brand that started manufacturing the pipes in North America in the 1920s). A large proportion of pipes have an assumed material make up of either cast iron, ductile or universal metal pipe material. Efforts as part of the City's 2020 Water Master Plan focused on records review, including but not limited to as-built construction drawings, GIS data, and first construction date by parcel (from tax rolls), to assign material and age to most system pipes, with the aim of assessing the system for the need of pipe replacement. The City obtained recommendations to perform localized condition assessment followed by potential replacement of pipes within a 5-year planning period, and for the 6- to 20-year planning horizon. As a result, the current

City's CIP includes a robust water main replacement program. This annual program involves perpetual enhancements to the water distribution system by means of replacing or upgrading aged infrastructure and undersized water mains, installing new fire hydrants and replacing deteriorated galvanized service lines throughout the City's service area.

3.3.2 BCWWS Water Distribution System

BCWWS Districts 1 and 2 distribute water to their customers through a high pressure piping system comprised of approximately 248 and 253 miles of water distribution and transmission mains, respectively. BCWWS District 1 maintains water system interconnections with the City of Fort Lauderdale, City of Tamarac, the City of Plantation, and the City of Lauderhill to provide for emergency water supply. The facilities of District 2 are interconnected with the City of Deerfield Beach, the Town of Hillsboro Beach, the City of Pompano Beach, and Palm Beach County to provide for emergency supply.

3.4 Potable Water Level of Service Standards

The potable water LOS was recalculated for the City of Pompano Beach as part of this WSFWP Update and in coordination with the 2025 City of Pompano Beach Water Master Plan Update (WMPU). The Broward County LOS was last updated in the 2020 BC WSFWP. The LOS standard for the utility service area served by the City is 141 gallons per capita per day (gpcd). For more detail on how the LOS was determined, refer to Section 5.5. The LOS for BCWWS Districts 1 and 2 are 96 and 112 gpcd, respectively. These values are summarized in Table 3.6.

Table 3.6 Broward County Districts 1 and 2 Standard Level of Service

Utility	Finished Water Level of Service (gpcd)
City of Pompano Beach	141(1)
BCWWS District 1	96(2)
BCWWS District 2	112(2)

Notes:
(1) Updated July 2025.
(2) Updated July 2020.

CHAPTER 4 RECLAIMED WATER SYSTEM

4.1 Reclaimed Water Treatment Facilities

There are two reuse water systems within the City limits, one operated by the City and the other operated by the BCWWS NRWWTP, located at 2401 North Powerline Road in Pompano Beach. Both facilities treat effluent from the BCWWS NRWWTP.

The City's reuse water treatment facility (RWTF) is located at 1799 North Federal Highway in Pompano Beach. The City's RWTF started production in 1989 with a capacity of 2.5 mgd. The system is nicknamed OASIS, which stands for "Our Alternative Supply Irrigation System." In 2002, the RWTF was expanded from 2.5 mgd to 7.5 mgd, and there is a future plan to expand the facility.

The City's RWTF operates under the FDEP Permit No. FLA013581 and it currently obtains its influent from a 54-inch diameter ocean outfall line from the Broward County NRWWTP, which is located near the intersection of Powerline Road and Copans Road. The City currently has an agreement with BCWWS for withdrawal allocations from their 54-inch ocean outfall pipeline up to a maximum of 5 mgd annual average daily flow (AADF) with the option to increase the volume at the City's discretion. Based on historical data analysis, the City's 2025 Reuse System Master Plan Update has recommended that the agreement with Broward County be modified to increase the withdrawal.

The secondary-treated effluent is filtered via deep bed sand filters and receives high level chlorine disinfection to meet public access reuse standards. The treated reuse water is stored in two ground storage tanks before being pumped to the City's adjacent golf course and other City customers and residential properties. Figure 4.1 shows the location of the facility, with the major facilities and pipelines denoted.

4.1.1 Reclaimed Treatment Facilities Expansion

Based on capacity evaluations performed in the 2025 Reuse System Master Plan, the following capital improvement projects were recommended at the treatment facilities to upgrade and improve reliable treatment capacity:

- Filter upgrades.
- Low pressure system pumps.
- Generator and motor control center (MCC).
- Pump station (initial and build-out phases).

Based on the storage capacity analysis performed in the City's 2025 Reuse System Master Plan, flow from the RWTF should be supplemented by the proposed storage and repump station before year 20 to support future demands.

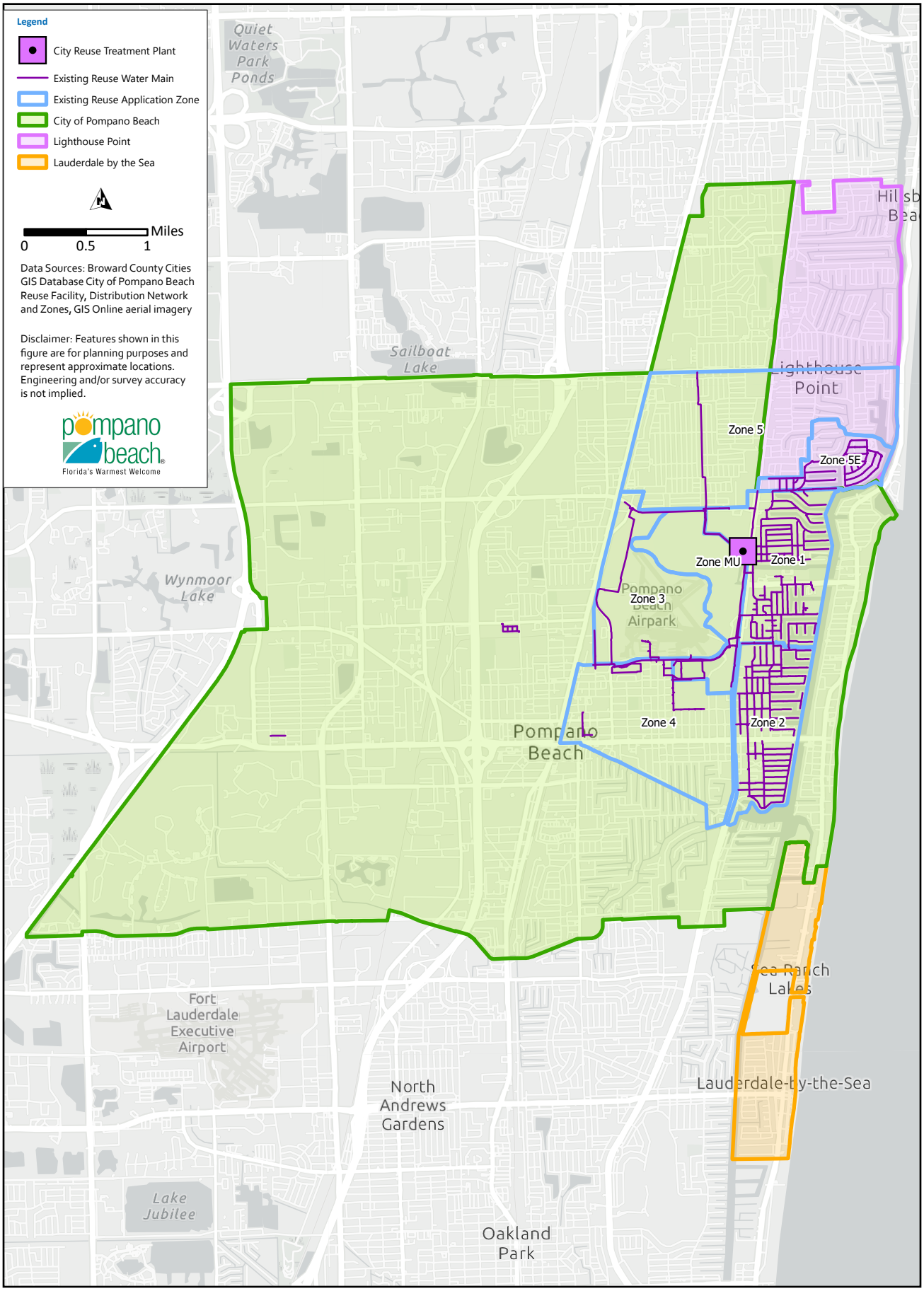


Figure 4.1 Location of City Reuse Facility and Reclaimed Water Distribution Network

4.2 Reclaimed Water Storage

The City has two reuse water onsite storage tanks with a total storage capacity of 6.0 MG.

There are two additional storage tanks anticipated - one in the BCWWS system and one in the City's system. Per the 2023-2024 LEC Plan Update, BCWWS has proposed a 16-mgd expansion of their North Regional water reclamation facility (WRF). Based on the Broward County 2020 Reuse Water System Master Plan Update Draft Report, BCWWS plans to install a 1-MG storage tank in their system, which would be located north of the City's system.

The City's 2020 Reuse Master Plan recommended the addition of 7 MG of storage along with a repump station to support projected reuse demands. Based on updated demands, the 2025 Reuse Master Plan Update, remote storage, and repump station improvements are recommended to be installed before Year 20. Proposed improvements include:

- Acquisition of at least two parcels for sufficient land.
- 7 MG total ground storage tank.
- 8,000 gpm firm pumping capacity.

The City has shown interest in utilizing City-owned property adjacent to the water treatment plant north of NE 3rd Street for this facility.

4.3 Reclaimed Transmission and Distribution Facilities

The existing reuse water distribution system consists of high pressure pipelines for the City Municipal Golf Course and low pressure pipelines for the other portions of the reuse distribution system. The City's reuse distribution system is comprised of approximately 37 miles of pipe ranging from 4 inches to 30 inches in diameter. The active users are comprised of a variety of land uses including residential, commercial, institutional, City medians, parks, etc. The City plans to expand the reuse water distribution system to other areas as shown on Figure 4.2.

The 2025 Reuse Water System Master Plan Update states that there are 2,105 reuse connections as of September 2024 of which 1,740 are active and 365 are inactive. This is a substantial increase over the last 10 years, as the number of active user connections was reported as 820 in the 2014 Master Plan. The active connections are a mix of residential, commercial, institutional, median, and park connections. Inactive accounts signify that an area has service availability but that no connection has been made. To date, the City's largest reuse customers are the City's Municipal Golf Course, Pompano Community Park, landscaping along Federal Highway and Copans Road, City medians, and residential areas east of Dixie Highway.

4.3.1 Reclaimed Use and Restrictions

The City regulates reuse water through the Code of Ordinances, Chapter 54, "Reuse Water and Cross-Connection Control." Chapter 54.04 of the City Code of Ordinances requires connection to the reuse system for public, commercial, office, industrial, warehousing, or multi-family use, when reclaimed water becomes available in that area. Newly constructed single-family developments are required to include reclaimed water distribution mains and are required to connect to the system when reclaimed water service becomes available. Connection to the system is currently voluntary for single family properties and mandatory for multi-family and commercial within the City. However, a monthly availability charge is assessed where reclaimed water service becomes available. Connection is mandatory for all types of properties within the LHP serviced area. Usage of reuse water is restricted between the hours of 10 a.m. to 4 p.m. according to the Broward County Code of Ordinances, Chapter 36 "Water Resources and Management," Article II "Water Emergencies."

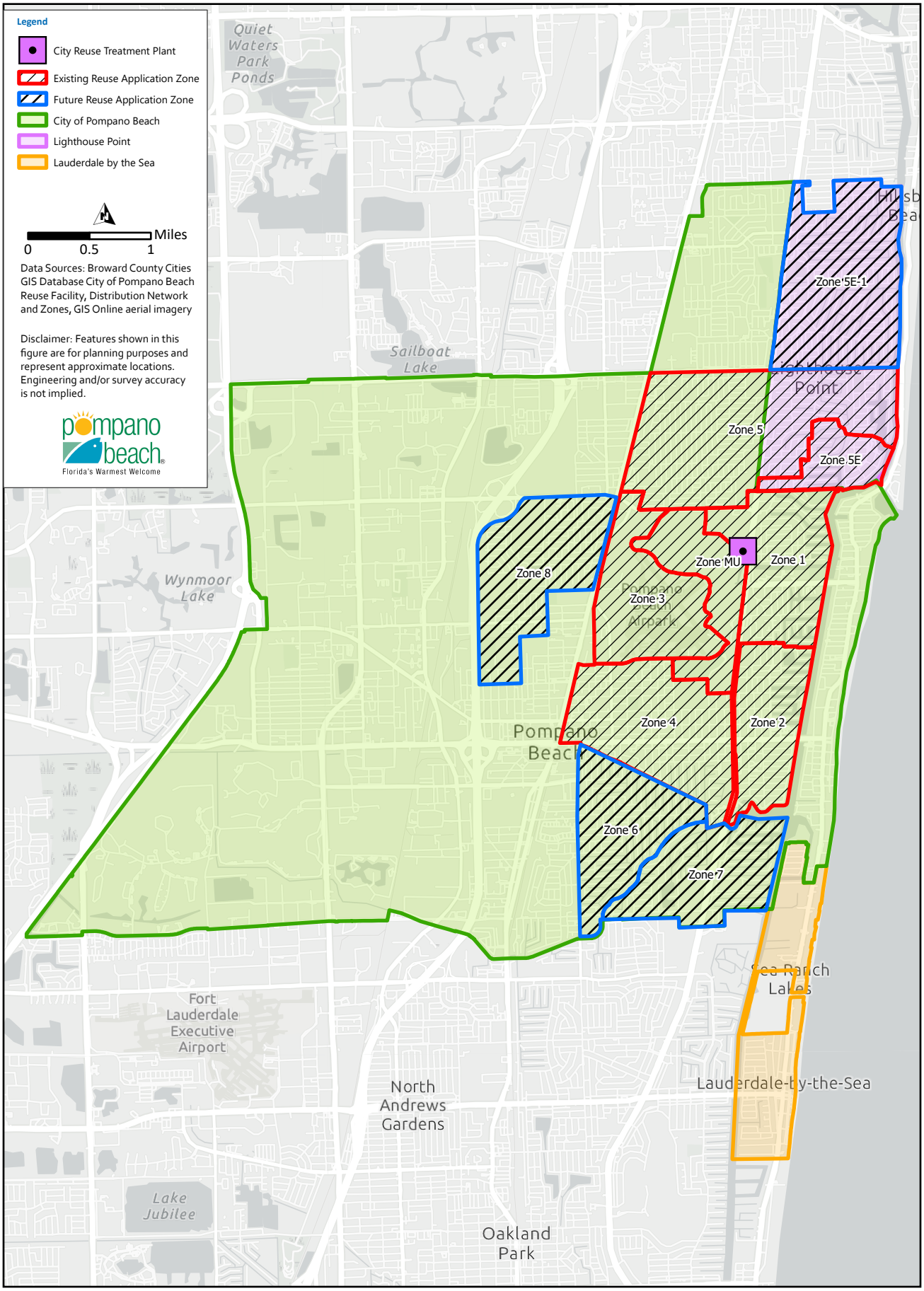


Figure 4.2 City of Pompano Beach and BCWWS Reuse Water Land Application Areas and Facilities

4.3.2 Reuse Agreements

The City has a large user agreement with the City of LHP to supply the southern portion with reuse water. The reuse agreement between the City of LHP and the City is included in Appendix D. The City has actively expanded the system in this area over the last few years. The City also provides reuse water to the City of LHP for irrigation of medians along Federal Highway.

The City also has an agreement with BCWWS to provide reuse water through a master meter to customers of Pompano Highlands, which is located in BCWWS service area. According to the Agreement, the City shall furnish reclaimed water services to BCWWS limited to an average rate of 1 mgd. This will be provided through the 20-inch reuse water line leaving the City's reuse water treatment facility and flowing northwest to the BCWWS 8-inch meter location. As of 2024, the pipelines for this Reclaimed Water Distribution Project to supply the Pompano Beach Highlands have been installed but are not yet in service. The reuse agreement between the City and BCWWS is included in Appendix E.

4.3.3 Reclaimed Transmission and Distribution Network Expansion

The following transmission and distribution system projects have been completed or are ongoing since the completion of the 2020 Reuse System Master Plan:

- LHP Reuse Water Main Expansion.
- Hillsboro Harbor Reuse Water Main Improvements.
- Habitat for Humanity Reuse Water Main.

The City plans to install additional piping within the network to account for anticipated new customers and increased demands. Table 4.1 summarizes the anticipated additional piping to be installed throughout the planning years.

Table 4.1 Summary of Additional Piping to be added to the Network by Planning Year

Diameter (inches)	2025 (LF)	2030 (LF)	2040 (LF)	Build-out (LF)
4	14,054	12,969	20,106	36,019
6	1,180	-	2,191	695
8	-	315	4,309	1,963
10	-	347	905	3,534
12	-	7,233	-	11,311
16	3,409	-	3,524	5,865
24	-	-	-	1,504
Total	**18,642**	**20,864**	**31,035**	**60,892**

Updated July 2020.

LF – linear feet

4.4 BCWWS District 2 Reuse Water Facilities

The BCWWS NRWWTP has a permitted treatment capacity of 95 mgd and provides wastewater treatment to several large utilities in the area. The plant includes water reclamation facilities to produce up to 10 mgd of highly treated water for industrial and landscape irrigation purposes. Currently, reuse water is used for irrigation, industrial process water at the North Resource Recovery Plant (a solid waste incinerator), and at the NRWWTP complex.

In 2008, the Florida Legislature enacted an OOL to eliminate the use of ocean outfalls as the primary means for disposal of treated wastewater. The law required wastewater utilities with an ocean outfall to increase reuse treatment capacity to at least 60 percent of the historic outfall flows by the year 2025. The objectives of this statute are to reduce nutrient loadings to the environment and to achieve the more efficient use of water for water supply needs. Because the Broward County NRWWTP has an ocean outfall, BCWWS is required to implement plans to meet this requirement. BCWWS is planning to meet the 60 percent reuse requirement by expanding its public access irrigation in northern Broward and southern Palm Beach counties, including expanding reuse systems in the cities of Pompano Beach and Coconut Creek.

The total amount of reuse required for the NRWWTP is 21.45 mgd, of which the County has developed an interlocal agreement with Palm Beach County to beneficially reuse up to 15 mgd of reclaimed water. BCWWS is proceeding with extending a 42-inch diameter reclaimed pipeline to serve beneficial reuse users in both Broward and Palm Beach Counties. Approximately 20 mgd of potential reclaimed users have been identified in the "Broward County Outfall Rule Detailed Plan North Regional Wastewater Treatment Plant Report," prepared by Hazen and Sawyer in 2013. County staff are also pursuing new potential users.

A 16-mgd reclaimed water filter capacity expansion with high-level disinfection and pumping facilities was commissioned by Broward County. Most of the proposed 16 mgd will be transmitted to and used in Palm Beach County.

The County has initiated several reclaimed pipeline projects over the past few years. BCWWS has installed reclaimed water pipelines in the Pompano Highlands neighborhood as part of a Neighborhood Improvements Program. The reclaimed system is complete, and the City of Pompano Beach has agreed to provide reclaimed water for residential landscape irrigation from the City of Pompano Beach RWTF. The City of Coconut Creek entered into an interlocal agreement with BCWWS in April 2016 to initially receive up to 1.4 mgd of reclaimed water with a long-term expectation of 3 mgd. Two connections were established to serve Coconut Creek. The County has also enacted Ordinance No. 2017-05, which calls for mandatory reuse under Chapter 34, Article XI, Reclaimed Water, in the Broward County Code of Ordinances.

CHAPTER 5 DATA AND ANALYSIS

5.1 Planning Timeframes

This chapter evaluates the historical and future population projections for the City's Water Utility Service Area (utility service area). Projected raw and finished water demands are presented for the existing condition, a 5-year outlook (2030), a 10-year outlook (2035), a 20-year capital planning horizon (2045), and ultimate buildout (2065). Ultimate buildout projections are provided for consistency with requirements set forth by the SFWMD for utilities participating in the C-51 Reservoir alternative water supply (AWS) effort. This chapter also includes the City's current water conservation and reuse practices.

5.2 Historical Population

A thorough evaluation of historical population trends that included reconciliation of several past reports and sources had been developed as part of the City's 2020 WSFWP. The results of that effort are shown in Table 5.1, along with recent historical records of population served by the utility in 2023 and 2024. It shall be noted that the City's jurisdictional boundary is different from the utility service area, as shown in Figure 1.3; therefore, Table 5.1 addresses the population served solely within the utility service area.

Table 5.1 Summary of Service Area Historical Population

Areas Served	As Presented in the 2020 WSFWP			Updates after 2020 WSFWP	
	2010(1)	2015(1)	2020(1)	2023	2024
City of Pompano Beach	78,073	86,144	91,210	94,218(2)	95,057(2)
Lighthouse Point(3)	1,305	1,301	1,322	1,312	1,309
Lauderdale-By-The-Sea(3)	2,512	2,759	2,664	2,647	2,641
Total Service Area	81,890	90,204	95,196	98,177	99,007

Updated July 2025.

Notes:
(1) From extensive data analysis in the City of Pompano Beach 2020 Water Supply Facilities Work Plan.
(2) Official City of Pompano Beach Planning and Zoning Department population count as submitted to Bureau of Economic and Business Research (BEBR), adjusted to the utility service area.
(3) Population served by the City of Pompano Beach calculated by area proportion with the official Broward County Planning and Development Management Division 2024 population estimates and projections for LHP and LBTS.

5.3 Population Projections

Because population projections had been reevaluated in 2022 for the filing of the City of Pompano Beach WUP modification (after City Commission approval of City's participation in the C-51 Project), such projections were used as a base for the projections shown in this section of the 2025 WSFWP, then adjusted to reflect the actual 2023 and 2024 population as reported to BEBR by the City of Pompano Beach Planning Department, and lastly updated to include: 1) new development as envisioned by the same Department, and 2) latest population projections for LHP and LBTS, proportion-adjusted to only the served area. The WUP modification, in turn, utilized a series of sources consisting mainly of the 2020 WSFWP.

Table 5.2 shows the population projections summary through 2045. Appendix F shows the historical and projected annual population for the utility service area for years 2015 through 2045.

Table 5.2 Service Area Population Projections Summary

Areas Served by City of Pompano Beach Utilities Department	2025	2030	2035	2040	2045
City of Pompano Beach(1)	95,895	104,193	108,298	111,035	113,636
Lighthouse Point(2)	1,306	1,290	1,275	1,270	1,266
Lauderdale-By-The-Sea(2)	2,635	2,607	2,579	2,554	2,528
Total Service Area	99,836	108,090	112,152	114,859	117,430

Updated July 2025.

Notes:
(1) From projections used in 2022 for the WUP modification and adjusted per current and projected development by Planning and Zoning Department.
(2) Per 2024 Population Forecast and Allocation Model (PFAM) projections, proportion-adjusted to served area.

Figure 5.1 shows the projected population growth at the traffic analysis zone (TAZ) level including adjustments by the Planning and Zoning Department. These adjustments include population growth and redistribution due to new development and redevelopment. Figure 5.1 also shows the projected change in population for planning years 2030 (the 5-year outlook), 2035 (the 10-year outlook), and 2045 (the 20-year capital planning horizon).

5.3.1 City Water Service Area Population vs. City Population

Population projections for the City's utility service area (which differs from the governmental territory as shown in Figure 1.3) were calculated using the service area boundary, the population within this boundary based on TAZ, and adjustments per the City Development Services Department's request as mentioned above. A ratio of water service area to City area of 85 percent was derived using geographic information systems (GIS). The remaining 15 percent of the City's population that is not included in the City's utility service area is served by BCWWS as part of the District 1 and District 2 service area. More information on the City's population served by BCWWS is located in Section B - BCWWS of the Data and Analysis chapter in the 2020 BC WSWFP in Appendix A.

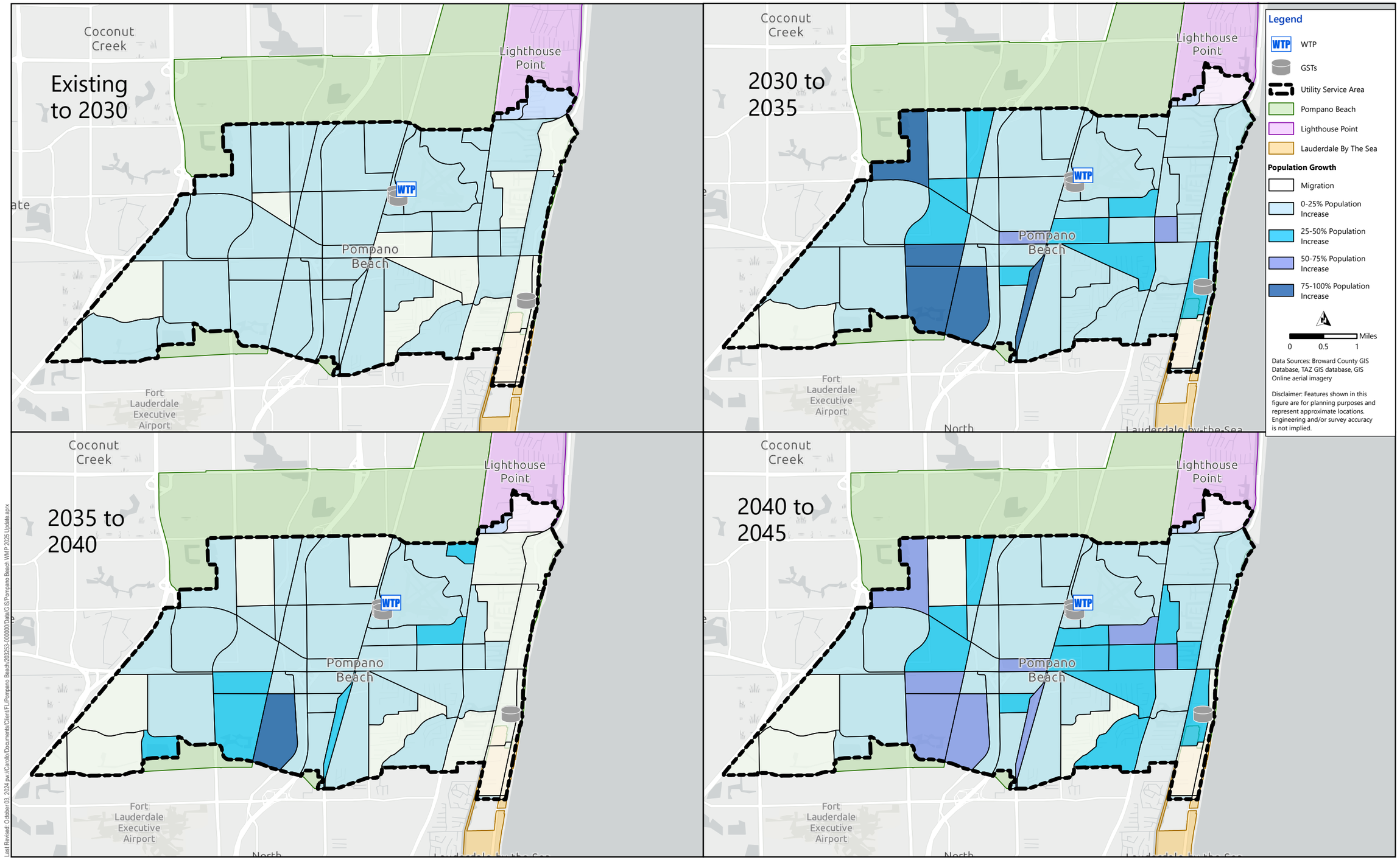


Figure 5.1 Population Growth Distribution

5.4 Historical Water Use

The following sections summarize and analyze the City's historical finished water production data. Monthly operating reports (MOR) from the WTP were reviewed to assess water production trends from 2019 to 2024, as the previous WSFWP addressed production through 2018.

5.4.1 Annual Average Demand

The average finished water production from January 2019 through July 2024 was 14.5 mgd. Figure 5.2 illustrates the historical trend of finished water production.

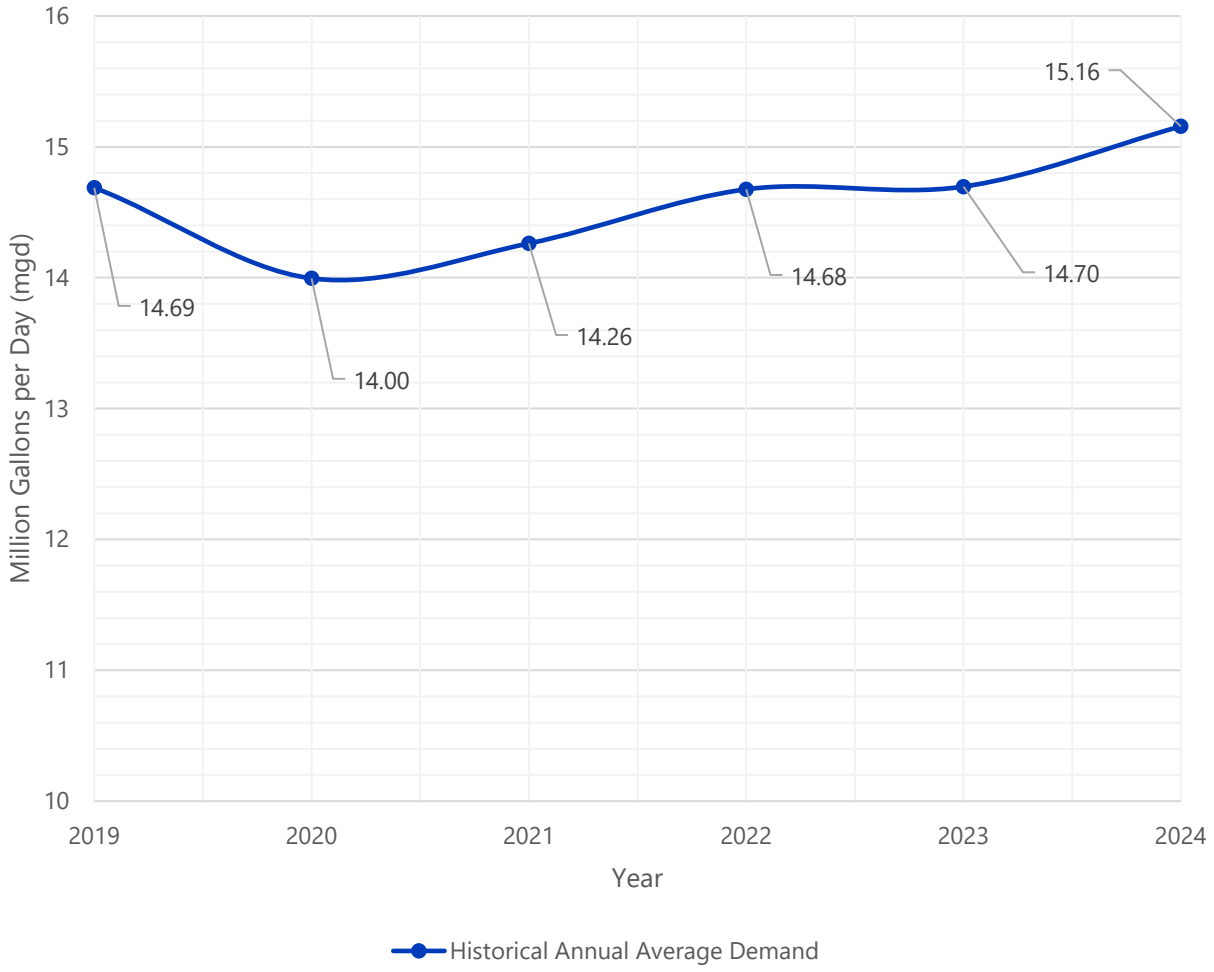


Figure 5.2 Five-Year Annual Average Finished Water Production

It shall be noted that the finished water demand shown in Figure 5.2 included services provided to large users, historically including those listed in Table 5.3. Each of the customers listed in Table 5.3 have individual/master meters.

Served areas of LBTS and LHP are not considered large users for demand analysis purposes given that residents within these areas are connected to the distribution network and have single meters as other customers within the City of Pompano Beach. Also, it is assumed that demand growth in these two areas will always be population-dependent and therefore have a share in the per capita demand factor.

Table 5.3 Large User Historical Demand

User	Demand (gpm)		
	2020	2023	2024
Florida Textile Service, LLC	123.3	123.3	123.3
Broward County Detention Center	110.9	110.9	110.9
Pompano Business Park Owners Association	76.1	76.1	76.1
Broward Sheriff's Office	56.5	56.5	56.5
Palm Aire Resort Association	32.9	32.9	32.9
Universal Brand	16.4	16.4	16.4
Associated Grocers of Florida	14.6	14.6	14.6
Pompano Marketplace Owners	13.5	13.5	13.5
PPI, Inc. Racetrack(1)	45.3	45.3	45.3
Total (gpm)	**489.5**	**659.4**	**715.1**
Total (mgd)	**0.709**	**0.95**	**1.03**

Updated July 2025.

Notes:
(1) Demand to be potentially replaced by redevelopment by 2025 (Live! Casino Pompano or 'The POMP').

The average production data, with and without the volumes of these large users, was also used to determine the per capita water demand factor, as described in the following section.

5.5 Level of Service, Per Capita Water Demand Factor

Actual population data for years 2020, 2023, and 2024 were used along the annual average finished water production shown in Figure 5.2 to determine the historical per capita water demand factor for each assessed year. The values varied from 147 to approximately 153 gpcd, with an average of 149.8 gpcd. When discounting the large users (not population-dependent), the factor varied from 139.7 to 142.4 gpcd, with an average of 141 gpcd for the past 5 years. Calculations for the per capita finished water demand factor, also referred to as the LOS, are included in Table 5.4.

Table 5.4 Historical and Current Per Capita Finished Water Demand Factor

Parameter	Year				
	2020	2021	2022	2023	2024
Population Served(1)	95,196	96,190(1)	97,183(1)	98,177	99,007
Avg. Daily Finished Water Production (mgd)	14.00	14.26	14.68	14.70	15.14
Overall Per Capita Demand Factor (gpcd)	**147.1**	**148.2**	**151.1**	**149.7**	**152.9**
Five-Year Average Including Large Users Demand	**149.8**				
Demand by Large Users (non-population dependent)(2)	0.71	0.79	0.87	0.95	1.03
Avg. Daily Finished Water Production Minus Large Users (mgd)	13.3	13.5	13.8	13.8	14.1
Actual Per Capita Demand Factor (Discounting Large Users) (gpcd)	**139.7**	**140.3**	**142.0**	**140.6**	**142.4**
Five-Year Average Excluding Large Users Demand	**141.0**				

Updated July 2025.

Notes:
(1) 2021 and 2022 values were interpolated from actual 2020 and 2023 values.
(2) Interpolated using 2020 and 2025 values. The increase is only due to proposed demand by the Isle Casino large user.

The results shown in Table 5.4 are lower than the per capita values reported in the previous WSFWP 2020 Update, which suggests that water conservation and reuse have had a notable effect in the LOS. Moreover, the values in Table 5.4 carry low uncertainty as finished water meters at the WTP were replaced at the end of 2018.

The 5-year average demand factor of 141 gallons per capita was selected by the City for planning purposes.

When used to project demands, it should be noted that this 141-gpcd demand factor does not include large users; therefore, the large user water demands should be added on top of the population-dependent demand, with the assumption that their demand will remain constant in the future, unless planned for redevelopment.

Finished water demand projections were calculated by multiplying the population projections listed in Table 5.2 by the 141 gpcd factor, plus large user demands. Finished water demand projections are presented in the following section.

5.6 Finished Water Demand Projections

Annual average, maximum month, and maximum day finished water demand projections were developed for 2025, 2030, 2035, 2045, and 2065, which correspond to existing conditions and future planning periods in the 5-year, 10-year, and 20-year horizon. The 2065 projection is provided for consistency with the City's WUP, which includes provisions for allocation under the C-51 Reservoir Project through 2065. The following subsections identify service area demand projection results.

The finished water demand projections for the City's population served by BCWWS have been calculated and may be found in Section D - Water Supply Provided by Local Governments, in the Data and Analysis chapter of the 2020 BC WSWFP in Appendix A. BCWWS has sufficient water supply to provide to their customers and the City will not be required to service District 1 and District 2.

5.6.1 Average Annual Demand Projections

Average annual demand projections determine the demand on an annual average basis. The average annual projected demand that is population-dependent is calculated by multiplying the population projected by each planning period by the updated per capita demand factor of 141 gpcd. Non-population-dependent demand, which is comprised of the large users listed in Table 5.3 plus new projected large users, is added to the population-dependent demand to obtain the total average annual demand.

5.6.1.1 Population-Dependent Demand Projections

Population projections for the City's water service area boundary were calculated as described in Section 1.2. Service area population projections and their geographic distribution are reported in Table 5.2 and Figure 5.1, respectively. These population projections do not include large users within the City's service area.

Calculations indicate that population-dependent demand made up 93.5 percent of the total demand in 2023 and 93.2 percent of the total demand in 2024. It is projected that this population-dependent demand percentage will decrease slightly throughout the 20-year and 40-year projections, and the large user demand is projected to increase, although minimally, due to mixed use redevelopment.

For 2025 through 2065, the per capita demand factor of 141 gpcd was used along with the population projections to derive the population-dependent demands. Based on the analysis, the population-dependent demand for 2030 was 15.24 mgd and can be expected to increase to 16.56 mgd by 2045 and to 16.84 mgd in 2065. Resulting population-dependent demand projections are listed in Table 5.6.

5.6.1.2 Non-Population Dependent or Large User Demand Projections

The City currently serves customers that are considered large users, as listed in Table 5.2. It is assumed that the demand from these users will remain constant throughout the planning horizon, except for Live! Casino at Pompano (now known as 'The POMP', previously PPI, Inc.), Oceanside Pompano Park, Barrier Island, and the Palm Aire new mixed use developments, which are planned to be built in phases. Assumptions about these developments as provided by the City include the following:

- The Live! Casino at Pompano is undergoing a major expansion. The proposed development area is located in the City, bordered by Pompano Park Place to the north, Cypress Bend Drive to the south, Powerline Road to the east, and the Seaboard Coast Line railroad tracks to the west. Currently, the Casino site is served by three public water supply meters, but most of the proposed development area lacks access to potable water distribution lines. The surrounding water utility service is primarily for commercial and residential properties. The development will include residential units, an office complex, a theatre, casino, and other commercial businesses. It is assumed that the commercial areas will be completed by 2025, along with approximately 50 percent of the commercial recreation area, totaling to 266,500 gpd or 185.1 gpm. The racetrack and its historical demand of 45.0 gpm are to be removed and replaced with the 185.1 gpm. By 2030, the remainder of the commercial recreation is assumed to be completed, along with the office and residential units, for a total demand of 748,631 gpd or 519.9 gpm. The large user demand for the Live! Casino at Pompano throughout the planning years is included in Table 5.5.

- Carollo Engineers (Carollo) has also included the Oceanside Pompano Beach planned development into the large user demand. This development will consist of a 24-story building with 77 multifamily units, 303 hotel/condo units, a spa, banquet facilities, restaurants, retail/office space, bars, and outdoor dining. The development will expand over 161,250 square feet (3.7 acres) of land and is anticipated to be completed in 2027. The Oceanside Pompano Beach development's projected demand of 111,285 gpd (77.28 gpm) has been incorporated into the demand projections listed in Table 5.5. For planning purposes in calculating demands, the 77 residential units were not included in the population projections or population-dependent demand calculations as they are accounted for in this large user demand.
- The Barrier Island development and the Palm Aire new development both consist of mixed use construction. It is assumed that they will be connected to potable water utilities in phases, starting with one fourth of their demand in 2025. It is expected that there are built-out by 2030, as reflected in Table 5.5.

Table 5.5 lists the constant and variable projected demands from large users including the Live! Casino at Pompano, Oceanside Pompano Peach, Barrier Island, and Palm Aire through the planning horizon.

Table 5.5 Large User Demands

User	Demand (gpm)			
	2025	2030	2040	2065
Florida Textile Service, LLC	123.3	123.3	123.3	123.3
Broward County Detention Center	110.9	110.9	110.9	110.9
Pompano Business Park Owners Association	76.1	76.1	76.1	76.1
Broward Sheriff's Office	56.5	56.5	56.5	56.5
Palm Aire Resort Association	32.9	32.9	32.9	32.9
Universal Brand	16.4	16.4	16.4	16.4
Associated Grocers of Florida	14.6	14.6	14.6	14.6
Pompano Marketplace Owners	13.5	13.5	13.5	13.5
Live! Casino at Pompano (The POMP)(1)	185.1	519.9	519.9	519.9
Oceanside Pompano Beach	0.0	77.3	77.3	77.3
Barrier Island Development	20.7	82.6	82.6	82.6
Palm Aire new Development	39.0	156.0	156.0	156.0
Total (gpm)	**689.0**	**1,280.0**	**1,280.0**	**1,280.0**
Total (mgd)	**0.99**	**1.84**	**1.84**	**1.84**

Updated July 2025.

Notes:
(1) Planned in two phases by 2025 and 2030.

Table 5.6 shows the resulting annual average demand projections, including the population-dependent and large user demand components. Based on the analysis, the average daily water demand of 2024, which was 15.14 mgd, can be expected to increase to 18.89 mgd by 2045 and to 19.18 mgd by 2065 when only continuing service to the current customer base.

Table 5.6 Annual Average Finished Water Demand Projections

Year	Projected Service Area Population	Annual Average (mgd)(1)	Annual Average with Large Users (mgd)(2)
2025	99,836	14.08	15.07
2030	108,090	15.24	17.08
2035	112,152	15.81	17.65
2040	114,859	16.20	18.04
2045	117,430	16.56	18.40
2050	119,027	16.84	18.62
2055	119,427	16.84	18.68
2060	119,427	16.84	18.68
2065	119,427	16.84	18.68

Updated July 2025.

Notes:
(1) Per capita demand factor of 141 gpcd applied.
(2) Includes large users projected demands as summarized in Table 5.5.

5.6.2 Maximum Month Demand Projections

Maximum month demand is defined as the average demand during the highest demand month throughout the year. Finished water demand from the past 10 years was used to determine the monthly peaking factors. A maximum month peaking factor of 1.11 was applied to the average annual demand projections to determine the maximum month water demands. Based on the analysis, the maximum month demand for January through October 2024 was 16.81 mgd and can be expected to increase to 20.42 mgd by 2045 and to 20.73 mgd by 2065. Resulting maximum month demand projections are listed in Table 5.7.

5.6.3 Maximum Day Demand Projections

Maximum day demands are used for sizing treatment facilities, fire flow availability determination, and evaluation of storage capacity. Historical daily finished water production data from 2014 to 2024 was evaluated to determine the overall maximum day peaking factor. A maximum day peaking factor of 1.35 was applied to the average annual demand projections to determine the maximum day water demands. Based on the analysis, the maximum day demand for 2024 was 20.38 mgd and can be expected to increase to 24.84 mgd by 2045 and to 25.22 mgd by 2065 based on the selected peaking factor. The resulting maximum day demand projections are listed in Table 5.7.

5.6.4 Peak Hour Demand Projections

Peak hour demand projections are used for sizing the distribution pump stations. Modeling analyses consider peak hour demands to determine the distribution system's ability to meet this demand condition. The peak hour demand factor is calculated by applying the maximum diurnal peaking factor of 1.27 to the maximum day peaking factor of 1.35, for a total peak hour factor of 1.71. This demand factor can be applied to annual average demands in the City's model in a steady-state scenario to simulate the distribution system's highest potential demand condition (peak hour). Based on the analysis, the peak hour demand for

2024 was 25.82 mgd using the selected peaking factor and can be expected to increase to 31.46 mgd by 2045 and to 31.94 mgd in 2065. Table 5.8 includes a summary of peak hour demand projections.

5.6.5 Summary of Finished Water Demand Projections

Table 5.7 summarizes the finished water demand projections that the City plans to use for the upcoming 40-year planning horizon. These water demand projections are also used in the City's 2025 Water Master Plan Update and its analyses.

Table 5.7 Finished Water Demand Projections

Year	Projected Service Area Population	Annual Average(1)	Annual Average with Large Users(2)	Maximum Month	Maximum Day	Peak Hour
		Peaking Factors				
				1.11	1.35	1.71
		Projected Water Demands (mgd)				
2025	99,836	14.08	15.07	16.72	20.34	25.76
2026	101,487	14.31	15.30	16.98	20.65	26.16
2027	103,138	14.54	15.53	17.24	20.97	26.56
2028	104,788	14.78	15.77	17.50	21.28	26.96
2029	106,439	15.01	16.00	17.76	21.60	27.36
2030	108,090	15.24	17.08	18.96	23.06	29.21
2035	112,152	15.81	17.65	19.60	23.83	30.19
2040	114,859	16.20	18.04	20.02	24.35	30.84
2045	117,430	16.56	18.40	20.42	24.84	31.46
2050	119,027	16.78	18.62	20.67	25.14	31.85
2055	119,427	16.84	18.68	20.73	25.22	31.94
2060	119,427	16.84	18.68	20.73	25.22	31.94
2065	119,427	16.84	18.68	20.73	25.22	31.94

Updated July 2025.

Notes:
(1) Per capita demand factor of 141 gpcd applied (based on the average of the past 5 years).
(2) Includes projected demands of large users as summarized in Table 5.5.

Figure 5.3 is a graphical representation of the historical water production and the finished water demands as projected in Table 5.8. The projected water demands are anticipated to increase at a steady incremental growth throughout the 20-year planning horizon and stabilize by buildout. The annual average demand with large users is projected to increase roughly 3.33 mgd within the 20-year planning period, and 3.61 mgd within the 40-year planning period.

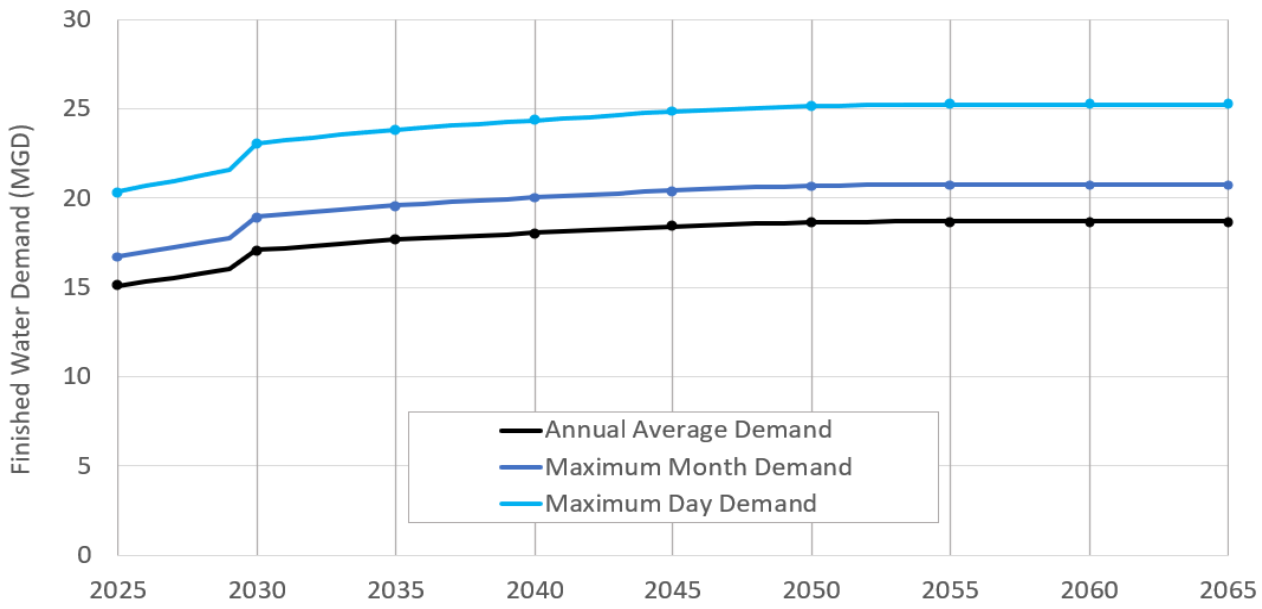


Figure 5.3 Projected Finished Water Demands

5.7 Raw Water Demand Projections

Annual raw and finished water data from historical WTP MOR data were collected for 2019 to 2024. Raw to finished water ratios were determined annually for the 5-year period. An average ratio of raw to finished water was calculated to be 1.07. In past WSFWP Updates, the City of Pompano Beach had historically used this ratio to project raw water demand through the planning horizon. However, due to the advent of the National Primary Drinking Water Regulation (NPDWR) for six PFAS, it is expected that this ratio changes in the future, yielding the need of increased raw water demand.

To address this regulation and its repercussion on water supply, the City of Pompano Beach has performed a Water Facilities Plan: Emerging Contaminants Water Treatment Plan Upgrades (McCafferty Brinson, 2024) study through a consultant to pilot test and conceptualize the technology, the potential capital investment, and the raw water demand needs. Subsequently, the City commissioned the preliminary design of the facilities. A Preliminary Design Report for the Water Treatment Plan Upgrades, 90% Submittal (McCafferty Brinson, June 2025) expects a higher ratio of raw water to finished water to address NPDWR.

In general, the study proposed a WTP upgrades project that will consist of a phased program. The first phase will consist of building-out the membrane treatment capacity to a total of 30 mgd (from 10 mgd). Decommissioning of the existing 40-mgd lime softening (LS) process would be performed as part of a separate phase of this program. It is intended that the raw water necessary for this expansion is supplied by use of the Biscayne Aquifer through the City's wellfield infrastructure. A hydrogeologic modeling study will be commissioned to determine wellfield operations to substantiate availability as part of permitting procedures. However, strategies will be investigated and pursued under this program that will include (but may not be limited to) additional withdrawal offsets from the C-51 Reservoir Project (e.g., Phase 2), offsets from expansion of the City's existing reclaimed water reuse system as shown in this WSFWP Update, and other alterative water supply opportunities.

Table 5.8 summarizes the raw water demand projections under annual average and maximum day conditions that resulted from this study and the subsequent Preliminary Design Report for the Water Treatment Plan Upgrades, 90% Submittal (McCafferty Brinson, June 2025).

Table 5.8 Raw Water Demand Projections

Year	Annual Average Demand (AAD)	Maximum Day Demand (MDD)
Current Treatment Processes and Current Water Supply(1)		
2025	16.12	21.76
WTP Upgrades(2)		
2030 (5-year)	20.83	28.12
2035 (10-year)	21.52 total	29.05 total
2045 (20-Year)	22.43 total	30.28 total
2065 (Build-out)	22.78 total	30.75 total

Updated July 2025.

Notes:
(1) Historical raw to finished water ratio of 1.07 applied.
(2) Buildout of the existing NF membrane facility at 82% recovery and decommission of lime softening process to comply with NPDWR for six PFAS and its compliance schedule. Uses current Biscayne water allocation.

As noted above, the existing Biscayne Aquifer allocations in the WUP will support a total expanded NF process capacity of approximately 20 mgd. Implementation of an additional 10 mgd NF to meet the balance of the approximately 30 mgd projected buildout MDD will require modification of the City's SFWMD WUP to include the necessary allocations from the Biscayne Aquifer to meet the raw water supply needs.

5.8 Reclaimed Water Use Demands Projections

The City's reuse water demand projections were recently updated as part of the 2025 Reuse Water System Master Plan Update. Similar to the methodology used in the 2014 Reuse Master Plan, this update delineates reuse zones based on geographical significance. The existing and future reuse zone notation are shown in Figure 4.2. The projections were based on three distinct types of users, including: 1) inactive accounts, 2) proposed residential customers (single family residential), and 3) future large users (multi-family residential, commercial, etc.). To estimate the future demands, the estimated number of users for each service type within each reuse zone was determined. The projected reuse water demand was calculated for each area based on the City's reuse water LOS standard, shown in Table 5.9.

Table 5.9 Summary of City of Pompano Beach Reuse Water Standard Level of Service

Criteria	2025 Level of Service
Single Family Use	364 gpd
Multi-Family Use	60 gpd/unit
Parks	0.01 gpd/square foot
Commercial	0.30 gpd/square foot

Updated February 2025.

Table 5.10 presents the projected average day reuse demands (reuse ADD) for FY 2023 and for years 5, 10, 15, 20, and build-out. The projections show a total demand of approximately 5.35 mgd at build-out, with the greatest rate of increase within the next 5 years due to the completion of the Zone 5E projects and an investment bond.

Table 5.10 Projected Average Day Reuse Demands for the Planning Horizon

Reuse Zone (Figure 4.2)	2023 ADD (mgd)(1)	Year 5 ADD (mgd)	Year 10 ADD (mgd)	Year 15 ADD (mgd)	Year 20 ADD (mgd)	Build-Out ADD (mgd)(2)
Zone 5	0.13	0.35	0.57	0.78	1.0	01.0
Zone 5E	0.01	0.08	0.08	0.08	0.08	0.08
Zone 6	-	-	-	-	-	0.59
Zone 7	-	-	-	-	-	0.01
Zone 8	-	-	-	-		0.06
Zone MU (Golf Course)	1.30	1.30	1.30	1.30	1.30	1.30
Total with MU	2.57	3.17	3.52	3.82	4.11	5.35
Total excluding MU	1.27	1.88	2.22	2.53	2.81	4.05

Source: 2025 Reuse Water Master Plan (Tetra Tech, 2025). Updated February 2025.

Notes:
(1) 2023 ADD values are based on existing data.
(2) Zones 6, 7, and 9 are not expected to connect until after the 20-year planning horizon.
MU – multi-use

5.9 Water Conservation

The City's water conservation program encourages both conservation of water and use of alternative water supplies, such as reuse water for irrigation produced at the City's RWTF, nicknamed OASIS. The City's current conservation program elements are described below.

5.9.1 OASIS Infrastructure and Program

This program provides and promotes the use of reuse water as a viable water supply alternative for irrigation purposes within the City's service area. The City's Ordinance for Aquifer Protection prohibits the installation of new groundwater wells for irrigation in areas with access to water reuse systems. Since landscape irrigation can make up to 50 percent of the potable water demand, OASIS lessens the stress on the Biscayne Aquifer as it does not rely on drinking water supplies or additional extraction from natural water sources.

To date, the City has designed and installed approximately 37 miles of reuse water main. There are 2,105 reuse connections in the system as of September 2024, 1,740 of which are active and 365 are inactive. The number of total connections has increased approximately 70 percent since the last reported count in the 2020 WSFWP Update. The active connections are a mix of residential, commercial, institutional, median, and park connections. Inactive accounts signify that an area has service availability but that no connection has been made.

The City regulates reuse water use through the Code of Ordinances, Chapter 54, "Reuse Water and Cross-Connection Control." Chapter 54.04 of the City Code of Ordinances requires connection to the reuse system for public, commercial, office, industrial, warehousing, or multi-family use, where reuse water is available. Newly constructed single-family developments are required to include reuse water distribution mains and are required to connect to the system when reuse water service becomes available. Connection to the system is voluntary for existing Pompano Beach residential customers. However, an availability charge is incurred when reuse water service becomes available in an area, regardless of whether the connection is made. Within the LHP development area, connection to the reuse system is mandatory when service becomes available.

Irrigation with reuse is prohibited between the hours of 10 a.m. to 4 p.m. as detailed in the Broward County Code of Ordinances, Chapter 36 "Water Resources and Management," Article II "Water Emergencies." Under this program, the City has expanded the reuse water service area to the complete Zones 1 and 5E, and connect customers in Areas 1, 2, and 4. The City nursery uses OASIS for irrigation as does the Broward Beautiful Program plantings to the north of the Water Plant, the Sample-McDougald House, the City of LHP medians, and the Air Park.

5.9.2 "I Can Water Campaign"

The campaign, which is part of OASIS, was put in place as an innovative public education program. Since 1989, the City of Pompano Beach has been using reuse water for golf courses, parks, playing fields, and street medians. Over 1,195 single family homes have been connected to OASIS over 13 years through our I Can Water program. The City's I Can Water program connects single-family residential customers to our reuse system with no out-of-pocket expense. Using reuse water for lawn irrigation—and saving our drinking water for drinking—has conserved over 25 billion gallons of drinking water for the City since 1989. The program has allowed for a greater appreciation of water resources, management, and conservation. The success of this program is largely due to marketing and outreach efforts put in place for the campaign. The City Reuse & Outreach Water Conservation Coordinator has managed this program.

The educational campaign consists of the following elements: dedicated website; promotional videos; magazine articles; telephone hotline; and distribution of letters, door hangers, flyers, and customer satisfaction survey cards. The educational campaign has received several awards for its efforts, which include the 2024 WateReuse Awards for Excellence Community Water Champion, the 2023 IWRP Broward Grant Award for $175,000 to continue expansion of the system, the 2021 Florida Water Environment Association Public Education Award, the 2021 WateReuse Awards for Excellence Community Water Champion, the 2021 Environmental Protection Agency WaterSense Excellent Award, the 2020 Florida Water Environment Association 2 to 10 mgd Reuse System of the Year, the 2020 Florida Water and Pollution Control Operations Association Safety Award, the 2018 Outstanding Website Award from the Florida Water and Pollution Control Operators Association, 2016 Hermes Award for Communications and Marketing, the 2014 Florida Water Environment Association - Public Education Award, the 2013 1,000 Friends of Florida's Community Steward Award, the 2012 Broward League of Cities - Cities of Excellence Green Leaf Award, and the 2012 National WateReuse Association Public Education Program of the Year Award.

As part of this campaign, non-testable City owned dual check backflow devices are installed or replaced in an effort to deter cross connection. Additionally, tours of the reuse facility are offered to the Broward County Water & Climate Academy and City officials.

5.9.3 Public Information Program

This program provides water conservation information and practices to the City's residents and customers through the City's webpage, television channel, the annual Water Quality Report, and the City's Publication "Tradewinds." The City speaks to schools and community groups on water issues as well as participates in "green" events at local schools and health fairs. The City airs videos on reuse as well as water issues. The City also uses advisory signage at all public locations where reuse water is used. The City Utilities Department promotes area student participation in the Florida Section of the American Water Works Association (FSAWWA) Drop Savers Water Conservation Poster Contest and Water Tower Model Competition. The City staff partners with science, technology, engineering, and mathematics (STEM) schools to promote specific water conservation and science programs. The City also participated in the Plants and People Day outreach at the Sample-McDougald House and City staff typically attends the annual SFWMD Water Conservation Exposition. Throughout the years, the City has increased its public education and outreach to provide information about water conservation to the residents.

5.9.4 Dropcountr Application

Dropcountr is a mobile and online application designed to help residents monitor water consumption. The application can be used to track real-time water use, avoid leaks and water damage, compare water usage to others in the area, connect with utility alerts, and receive direct customer support. It is free and available to all City residential water customers.

Residents are able to set up a Dropcountr account by downloading the application on their mobile device in the Apple or Android App store or by signing up online. Resident name and account number as it appears on the utility bill are required for registration. On average, application users may reduce water consumption by 7 to 9 percent, leading to significant water and cost savings.

5.9.5 Leak Prevention and Detection Program (LP/DP)

This is a proactive approach to system maintenance in an effort to achieve the goal of preventing real or apparent water losses due to malfunctioning meters, distribution system leaks, and pipe failures. The City has several components to reduce breaks and leaks, such as an active main replacement program, and a meter replacement program. In order to obtain accurate water audit information, the City plans to City plans to double the previous amount of leak detection surveying and issue a contract for large meter testing and calibration.

The program uses water metered leaving the WTP and water billing records to track water losses in the distribution system which are targeted to less than 10 percent per year. Annual leak scans are provided by an authorized contractor. The City also offers free toilet leak detection tablets as part of the Water Conservation Program. In 2018, 8.2 miles of water mains and appurtenances were surveyed. In 2019, 37.9 miles were surveyed. Approximately 150 miles of water mains were surveyed from 2020 to 2024. The City expects to continue this program in subsequent years.

5.9.6 System Maintenance

System complaints concerning pressure and higher than normal water usage are investigated to determine if meter replacement is required. System pressures monitored via the City's supervisory control and data acquisition (SCADA) system, historical maintenance records, and hydraulic modeling help the City engineers identify, monitor, and plan for system pipe replacements.

5.9.7 Automatic Flushers

The City actively flushes the distribution lines to maintain water quality. The City has designed, manufactured, and installed automatic flushers at select locations in order to reduce the amount of water used for manual hydrant flushing. The City estimates automatic flushing installations have saved approximately 250,000 gallons annually over standard hydrant flushing procedures at each flusher. This project was partially funded by the SFWMD Structure Inspection Program (SIP).

5.9.8 Broward County Mobile Irrigation Lab (BC MIL)

The Mobile Irrigation Lab is a collaborative effort between the SFWMD, the United States Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS) and the agricultural community. The BC MIL seeks to provide practical advice on how to irrigate efficiently and conserve water based upon results of landscape and irrigation system performance evaluations. The City provides partnership funding for the BC MIL and looks for opportunities to engage the BC MIL in the community to promote conservation practices. The City uses the billing records to identify high users for further inspection or referral to the Mobile Irrigation Lab. The City staff assists in scheduling Broward County Mobile irrigation audit sites.

5.9.9 Residential Irrigation Rebate Program

The Residential Irrigation Rebate Program is an optional program through which BCWWS facilitates rebates to residents within the participating NatureScape Irrigation Service Partners' water service area. The program also provides irrigation system efficiency inspections and education on water conservation to residents. The program offers rebates to offset initial costs incurred in upgrading specified water-efficient irrigation system components. Rebates are offered to residents that purchase and install specified water-saving measures including adjustment of irrigation timing, zoning, head type and/or placement, and upgrades to system components such as valves, heads, times, and sensing devices.

5.9.10 Conservation Rate Structures

The City uses a tiered rate structure for portable and reuse water to encourage conservation. Potable water users are assessed a surcharge for high usage during water shortages. Reuse ordinance requires residents to pay an availability fee.

5.9.11 Metering and Water Efficiency Tracking

The City requires metering of all sources in order to accurately account for water use and determine water loss amounts. The City identifies high water users through the billing system for possible reuse hookup, mobile irrigation lab assessment, or other water savings options. The City is a member of the Alliance for Water Efficiency, which will allow standard tracking of water conservation savings.

5.9.12 Retrofit Program

The City implements a home plumbing fixture retrofit program. As part of this program, the City distributes showerhead, bath, and kitchen aerators during community events or upon request. From 2015 through 2018, the City conserved approximately 27.6 MG of water through the distribution of the plumbing retrofits. In FY 2019, the City distributed almost 1,000 water saving devices. The City has also provided and installed spray valves to over 100 restaurants served by the City utilities. The City continues to distribute plumbing retrofits to its customers all year round and estimates that annual savings have reached 25 MG in 2024. This project was partially funded by the SFWMD SIP.

5.9.13 In-Plant Initiatives

The City's conservation practices extend to the City's Utilities Department in water plant usage as well. Three radiators were installed on the WTP emergency generator systems to reduce the in-plant water consumption.

5.9.14 City Staff Education and Activities

City participation on the topic of sustainable water resources is shown by participation at the highest levels of City government. The City Utility Director is a member of the National Reuse Foundation and the former President of WateReuse Florida. The City utility is a partner with USEPA on the WaterSense program, an interactive internet web application that teaches homeowners about good conservation practices. The City Mayor, City Commissioners, and staff served as members on the Broward League of Cities Water Conservation Subcommittee. In 2018, the City won the Resilient Utility of the Year award from the Resilient Utility Coalition for demonstrated leadership in the development and implementation of infrastructure resilience throughout the United States. In 2019, 2021, 2023, and 2024, the utility was recognized as a "Utility of the Future Now" by a group of national organizations. In 2023, they received the Florida Water Environment Federation Safety Award. The many recognitions show the utility is using forward thinking operations to move into the future.

5.9.15 Year-Round Landscape Irrigation Conservation Measures (YRR)

The City updated its ordinance to include the Mandatory Year-Round Landscape Irrigation Conservation Measures (YRR), as detailed in Chapter 40E-24, Florida Administrative Code (F.A.C.). To encourage more responsible use of water resources throughout South Florida, the District's Governing Board adopted the Year-Round Irrigation Rule in 2010. The Rule restricts the times and number of days that landscape irrigation with potable water is allowed within the District's jurisdiction and follows scientifically-sound recommendations for lawn irrigation. In the City of Pompano Beach, irrigation with potable water is not allowed between the daily hours of 10:00 a.m. to 4:00 p.m., when evaporation is highest. In addition, irrigation with potable water is also restricted to certain days of the week. Reuse customers can, in contrast, irrigate any day of the week.

5.9.16 Conservation as Regulatory Objective

The City's emphasis on conservation can be directly observed by taking note of the conservation ordinance development, which is part of the City's overall Conservation Program as required by Special Permit Condition 16 of the WUP. The enacted conservation ordinances and regulations are summarized in

Table 5.11. Reuse ordinances require commercial properties and high-density residential units to connect to the reuse system for irrigation uses where reuse water is made available. Other ordinances restrict irrigation, require the installation of rain sensor devices, promote Florida-Friendly Landscaping, require the use of ultra-low volume plumbing fixtures and regulate the use of fertilizers.

Table 5.11 City of Pompano Beach Reuse and Conservation Regulations

City Code of Ordinances	Title	Description
50.03	Water Conservation Rate Structure	Ordinance sets a tiered rate structure that promotes conservation and assesses a surcharge for high usage during water shortages.
50.05	Water Conservation	Ordinance implements procedures to promote water conservation through the efficient use of landscape irrigation by assisting Broward County in the implementation of its mandatory year-round landscape irrigation conservation measures. The County's Code Article II, Section 36-55 is consistent with Rules 40E-24.201 and 40E-24.301, F.A.C. Ordinance supports water use efficiency; prevent and curtail wasteful irrigation practices by providing mandatory landscape irrigation conservation measures; and prohibit the operation of irrigation systems in a manner causing water to be wasted.
50.05	Ultra Low Volume Plumbing Standards	Ordinance incorporates by reference Florida Building Code flow restriction requirements.
155.127	Florida-Friendly Landscaping	Ordinance incorporates by reference SFWMD's Florida-Friendly Landscaping. Plant It Smart brochure. Ordinance also requires that landscaped areas include placement of native vegetation and substantial conformity with the Florida-Friendly Landscaping Principles referenced in the SFWMD Florida-Friendly Landscaping Plant Guide and outlined in the City Landscape Manual.
155.127	Rain Sensor Device	Ordinance requires rain sensor over-ride for new irrigation system installation.
155.5205	Florida Friendly Fertilizer Use	Ordinance regulates the use of fertilizers by requiring proper training of Commercial and Institutional Fertilizer Applicators, establishing training and licensing requirements, establishing a Prohibited Application Period and allowable fertilizer application rates and methods, identifying fertilizer-free zones, low maintenance zones, and exemptions.
54.04	Reuse Connection Required	Ordinance requires that, where available, the owner of every lot or parcel of land within the city utility service district developed for public, commercial, office, industrial, warehousing and/or multifamily use(s) shall connect or cause to be connected, with the reclaimed water distribution system. Single-family home developments constructed after 2020 shall include reclaimed water distribution mains and shall connect to the system when reclaimed water service becomes available. Connection to the system is voluntary for all existing residential customers; however, an availability charge will be assessed where reclaimed water service becomes available.
54.05	Reuse Connection Charges and Rates	Ordinance requires metered reuse accounts to be established
54.21	Aquifer Protection	New groundwater irrigation wells are prohibited in areas where reuse water is available. New wells requested by city permit in those areas supplied by the reuse utility customers will be denied.

Updated February 2025.

5.10 Water Loss Monitoring

The City monitors water loss by comparing treated water volumes metered leaving the WTP to billed water and annually reports this comparison to the SFWMD as unaccounted-for-water losses. Monthly unaccounted-for-water losses sometimes fluctuate due to the attempt to compare date-specific treated water volumes to rolling meter reading dates for the billed water. The calculated percent loss is influenced by the reported fluctuating volumes during different months of the year. The calculated average water loss for 2023 was 12.64 percent. However, since 2019, the annual average has been as low as 10.70 percent. Recent efforts taken to reduce water loss included:

- Preparation of a bond issuance to replace older water mains and customer water meters with automated meter infrastructure (AMI).
- Conducted an external audit for customer billing system to examine accuracy of records.
- Potential leaks in the system have been identified by a third party leak detention company contracted by the City.
- Large meters ranging from 3 to 10 inches in diameter have been tested and repaired as needed between 2020 and 2024. An increasing number of meters have been tested each year (from 130 meters in 2020 to over 300 in 2024).
- The City participated in the FDEP/American Water Works Association (AWWA) Water Loss Audit Training.

5.11 Supply and Demand Data Analysis Summary

5.11.1 Demand

Average annual demand projections determine the demand on an annual average basis. The average annual projected demand that is population-dependent is calculated by multiplying the population projected by each planning period by the updated per capita demand factor of 141 gpcd. Non-population-dependent demand, which is comprised of the large users listed in Table 5.5 plus new projected large users, is added to the population-dependent demand to obtain the total average annual demand. Data analysis completed of each of these components is summarized in the following bullets:

- Population Projections: Population projections presented to the SFWMD in 2022 for the filing of the City of Pompano Beach WUP Modification (after City Commission approval of City's participation in the C-51 Project) were used as a base, then adjusted to reflect the actual 2023 and 2024 population as reported to BEBR by the City of Pompano Beach Planning Department, and lastly updated to include: 1) new development as envisioned by the same Department, and 2) latest population projections for LHP and LBTS, proportion-adjusted to only the served area. The WUP Modification, in turn, utilized a series of sources consisting mainly of the 2020 WSFWP.
- Per Capita Demand Factor/LOS: Historical population data for years 2020 through 2024 were used along the historical annual average finished water production to determine the historical per capita water demand factor for each assessed year. The values varied from 147 to approximately 153 gpcd, with an average of 149.8 gpcd. When discounting the large users (not population-dependent), the factor varied from 139.7 to 142.4 gpcd.

- Large Users: Demand from large users historically totaled about 0.71 mgd. From 2020 to 2024, their demand began to increase and was about 1 mgd at the time that this WSFWP Update was completed in 2025. The City's Planning and Zoning and Utilities Departments anticipate enough large mixed-use development and redevelopment (non-population dependent) to increase the demand to about 1.84 mgd by 2030. As of 2025, no large users are foreseen between 2030 and 2065.

5.11.2 Supply

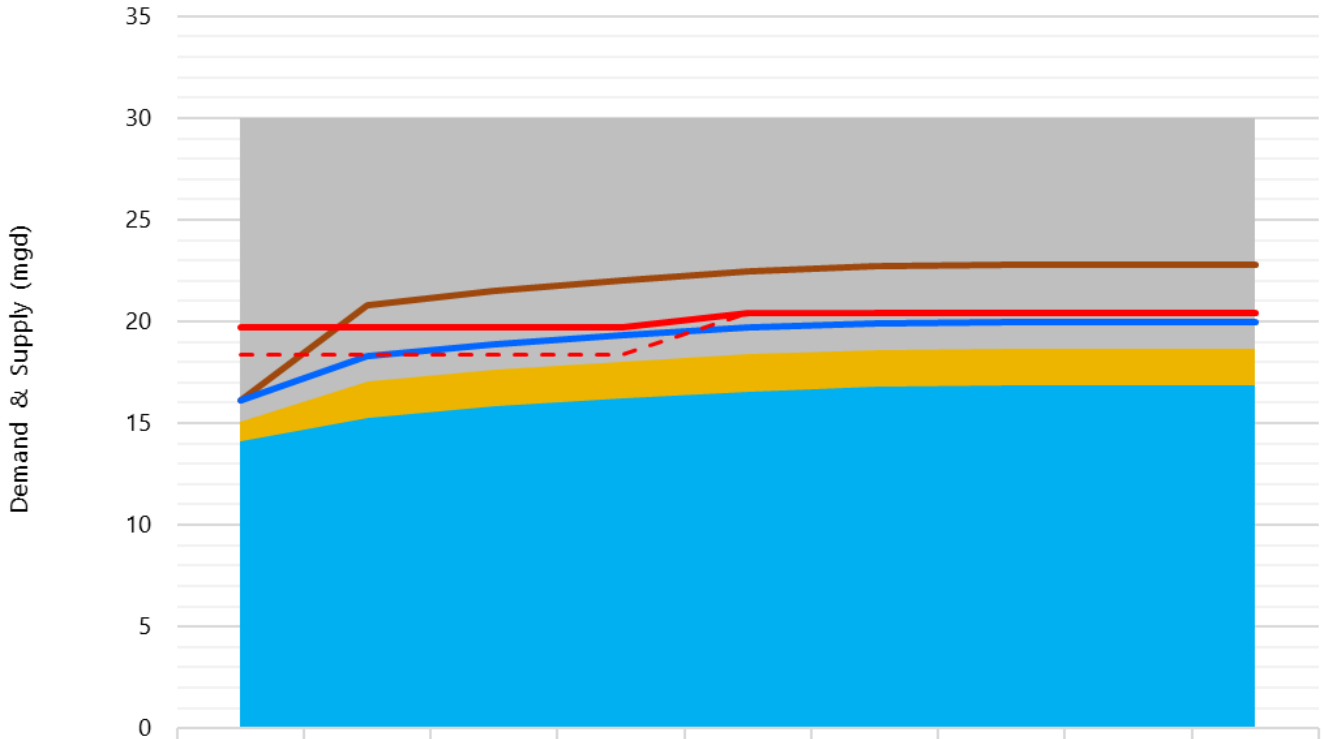
Raw water allocations specified in the SFWMD City of Pompano Beach WUP include a total annual Biscayne Aquifer allocation of 7,200.04 MG (19.73 mgd annual average day), with a maximum month withdrawal of 690 MG. Included in these WUP volumes are the reuse water credits and supply from the C-51 Reservoir Phase I Project.

Prior to April 10, 2024, when USEPA released the final NPDWR for certain PFAS with a compliance date for the PFAS NPDWR of 2029, it was believed that the total raw water required to supply the total demand was the latter times a factor of 1.07 (to account for treatment process efficiencies). Because the total annual average demand through 2065 is projected at 18.68 mgd, and therefore the raw water demand would have been 19.98 mgd if treatment process efficiency remained constant, the current allocation would have been sufficient.

However, according to the recent draft study "City of Pompano Beach Water Treatment Plant Emerging Contaminants Upgrades Facilities Plan," 2024 (Facility Plan), to produce the projected volume of treated water that is compliant with the new NPDWR for six PFAS substances, the City of Pompano Beach WTP will require an upgrade program. In the medium-term, this WTP upgrade program will require a supply of raw water that is greater than the volume of raw water use currently allocated.

In general, the proposed WTP upgrades project will consist of a phased program. The first phase will consist of building-out the membrane treatment capacity to a total of 30 mgd (from 10 mgd). Decommissioning of the existing 40-mgd lime softening (LS) process would be performed under a separate phase of this program. Also as part of another phase in the program, strategies will be investigated and pursued that will include (but may not be limited to) additional withdrawal offsets from the C-51 Reservoir Project (e.g., Phase 2), offsets from expansion of the City's existing reclaimed water reuse system as shown in this WSFWP Update, and other alterative water supply opportunities.

Figure 5.4 summarizes the calculated demand and supply projections for the years 2025 through 2065.



	2025	2030	2035	2040	2045	2050	2055	2060	2065
WTP Capacity (4-log)	30	30	30	30	30	30	30	30	30
AAD with Large Users	15.07	17.08	17.65	18.04	18.40	18.62	18.68	18.68	18.68
AAD Population-Dependent	14.08	15.24	15.81	16.20	16.56	16.78	16.84	16.84	16.84
Approx. Raw Water Supply Requirement for NPDWR Compliance	16.12	20.83	21.52	22.00	22.44	22.71	22.78	22.78	22.78
Raw Water Supply Requirement before NPDWR	16.12	18.28	18.89	19.30	19.69	19.92	19.99	19.99	19.99
Base Condition of the Current WUP	18.39	18.39	18.39	18.39	20.39	20.39	20.39	20.39	20.39
WUP + C-51 Reservoir Project Offset	19.73	19.73	19.73	19.73	20.39	20.39	20.39	20.39	20.39

Planning Horizon

Figure 5.4 Demand and Supply Projections Summary

CHAPTER 6 INTERGOVERNMENTAL COORDINATION ACTIVITIES

The City of Pompano Beach coordinates with the SFWMD, BCWWS, the City of LHP, the Town of LBTS, to ensure water services are planned for, adequately available, and provided to the water customers of the City. This section describes on-going activities with each agency or partner.

6.1 Coordination with the SFWMD Regional Water Supply Plan

The City has reviewed the SFWMD 2018 and 2023-2024 LEC Plan Updates and identified projects located within the City's utility service area. In response to both documents, a letter has been drafted to the SFWMD that summarizes the identified projects and their current status. The letter is located in Appendix G.

6.2 2020 Broward County 10-Year Water Supplies Facilities Work Plan and Inter-Agency Coordination Activities

The City has reviewed the 2020 BC WSFWP, and identified projects located within the City's utility service area. The document used has been included as part of Appendix A. As of April 2025, no amendments to the Broward NEXT2.0 Comprehensive Plan were noted that adopted a WSFWP Update after 2020.

Among the ongoing coordination activities with BCWWS, the following are included:

- Continued contract to withdraw treatment plant effluent to use as reuse plant influent. This agreement, which is imperative in the City's sustained conservation efforts to reduce future potable water demands, is included in Appendix E.
- Collaborate in utility organizations such as Southeast Florida Utility Council (SEFLUC), FSAWWA, and the Florida Water Environment Association (FWEA) to address regional issues encountered by Utilities and our customers.

Continued communication on regionalizing the City's reuse services and opportunities to ensure adequate water supplies for both municipalities' service areas is among the crucial needs identified.

6.3 Local Service Agreements and Coordination

The City of Pompano Beach initiated service to distribute water to portions of the City of LHP and the Town of LBTS in the 1980s. It also provides reclaimed water services to LHP. Recent reuse agreements are included in Appendices D and E. Ongoing coordination activities are as follows:

- The City provides Conservation programs and information to LHP and LBTS through the City's partnership with Broward County. The City offers plumbing retrofits, moisture meters, and leak detection tablets for customers as part of our ongoing effort to conserve our limited potable water.

- As part of the annual rate structure review, LHP and LBTS are informed of any public meetings on rate increases. LHP and LBTS administrators and management are cognizant that the City conducts annual rate structure reviews and are notified of rate increases along with the associated public meetings. Customers are also notified of public meetings for rate increases and are encouraged to participate.
- The City ensures LHP and LBTS are part of the planning team where there is a service issue or project in their area. Specifically for reuse expansion projects, LHP officials are included in planning efforts to offset potable water demands. The Cities collaborate on the design, permitting, and construction phases. Progress meetings and site visits are scheduled at various frequency for effective partnership. Once construction concludes, the City provides monthly status updates on the reuse connection program to LHP officials.
- LHP and LBTS inform the City of projects occurring in our service area and provides progress updates.
- Precautionary boil water notices, repairs, and other activities resulting in a disruption to customers are conveyed prior to their initiation if possible. Additionally, our CodeRed system transmits emergency notifications to customers of both cities.
- Most areas in LHP and LBTS are built-out. However, for effective planning and to ensure adequate water supply, the City is notified of projects requiring additional water supply for formal review and approval.
- The annual water quality Consumer Confidence Report (CCR) is shared with LHP and LBTS Administrators and customers.
- The City of Pompano Beach participates in LHP's Commission meetings when applicable.

CHAPTER 7 WATER SUPPLY FACILITIES WORK PLAN

This section incorporates information pertaining to the CIP and details the existing and future plans to meet the City's future water service area demands. The planning horizon for this WSFWP CIP is 2025 to 2035, per SFWMD guidelines. In December 2020, the City renewed their WUP, and implemented additional alternative water supplies in order to meet the projected future demands.

The population projections and water demands presented in Chapter 5 were used as the basis to develop the City's 2025 WMPU and are incorporated herein to the projects that are described in this section. In addition, this section discusses BCWWS proposed projects to meet the water demand of Districts 1 and 2, which serve areas within the City limits. Figure 1.3 displays the City limits and the water service areas for both BCWWS and the City.

7.1 Traditional Water Supply Projects

7.1.1 Wellfield Capacity and Projects

The City's water treatment plant exclusively uses Biscayne Aquifer groundwater for the City's water supply. The City WTP utilizes water from two wellfields, referred to as the Eastern and Western Wellfields. The Eastern Wellfield incorporates 15 wells that are near the municipal airport and close to the WTP just east of Dixie Highway between Atlantic Boulevard and Copans Road. The Western Wellfield incorporates 10 wells near the Palm Aire development near the Florida Turnpike. The Eastern Wellfield supplies water solely to the LS process, while the Western Wellfield can supply water to the LS or NF treatment process.

The City's existing permitted Biscayne Aquifer wells have a total rated capacity of approximately 66.5 mgd and a firm permitted treatment capacity of 44.5 mgd. The 2020 consumptive water use permit limits the annual average day withdrawals for the City's WTP to approximately 19.7 mgd, and the City's maximum month permitted withdrawals are limited to approximately 23 mgd of the wellfield capacity. The City's rated wellfield capacity is sufficient for the future demands during the 10-year CIP planning period, and the City is not required to construct additional wells. However, the City has developed a wellfield plan that will allow the abandonment of older wells and potential construction of newer wells further away from the saltwater interface. One of the wells in the Eastern Wellfield, Well No. 3 has recently been abandoned due to the proximity to the new injection well. The City plans to replace Well No. 3 with proposed Well No. 3R, which will be located in the Western Wellfield.

The City's new capital projects incorporate a Wellfield Performance and Relocation project to design, permit, and construct new wells. The preliminary study to review existing well rehabilitation and potential relocation and replacement of wells was completed in 2023.

In addition to capital projects, the City also has a Well Maintenance Project in its CIP. This ongoing project includes various maintenance, rehabilitation, and operational enhancements to the existing wellfields and may include routine maintenance and rehabilitation where circumstances dictate. In addition, the project will include telemetry enhancements, upgrades, and replacement. Ongoing maintenance is required by State and Federal monitoring regulations.

The City's renewed WUP expires on December 27, 2065.

7.1.2 Water Treatment Plant Capacity and Projects

The WTP has a rated treatment capacity of 50 mgd, which consists of a 40-mgd LS treatment process and a 10 mgd NF treatment process. In general, the City does not require an expansion of the treatment process strictly due to projected demand increases. However, the City does have several capital improvement projects to address future reliability, water quality, and to refurbish or replace aging systems at the WTP. In addition, with the advent of the NPDWR for six PFAS, it is imperative to invest in treatment technologies that would be capable of removing these emerging contaminants. The City has studied alternatives towards compliance, which result in capital improvement projects at the plant and at the level of raw water supply. To address this regulatory driver, the City has drafted its Emerging Contaminants project and resulting Water Treatment Plant Improvements project into its CIP. The City describes the project as follows:

> *"The purpose of this project is to provide compliance with the National Primary Drinking Water Regulation (NPDWR) for per- and polyfluoroalkyl substances (PFAS) that was released by the United States Environmental Protection Agency (USEPA) on April 10, 2024. In general, the project consists of the expansion of the City's existing 10 million gallon per day (mgd) capacity nanofiltration (NF) process to 30 mgd to meet the City's projected buildout maximum day demands (MDD), and decommissioning of the City's existing lime softening process (to be performed under a separate phase of this program). The expansion of the NF process will include yard piping modifications, a raw water booster pump station, a sand strainer system, the addition of new cartridge filters, replacement of membrane units, replacement of membrane cleaning system, addition of degasifiers, post-treatment for disinfection and stabilization, and necessary electrical and control upgrades to operate the above-described treatment systems".*

Projects are detailed in the following CIP section of this chapter.

7.2 City Alternative Water Supply Projects

The City's commitment to the development of AWS sources through the reduction of potable water used for irrigation and conservation of water have been demonstrated for decades. The City has expanded the reuse system to serve hundreds of customers in lieu of residences since the last plan update and continues to actively expand the reuse distribution system every year. These reuse efforts combined with community outreach and ordinances have led to a substantial decrease in per capita water usage. Overall, the City's efforts have reduced the per capita usage (LOS standard) from a high of approximately 200 gpcd in the 1990s to the average rate of 141 gpcd for the past 5 years. Although the City will continue to invest in reuse and conservation programs, the largest and most recent AWS project the City has embarked in was through its participation in the C-51 Reservoir Project, as described in Chapter 1. Table 7.1 details the proposed alternative water supply projects by which the City intends to meet future demands sources though 2035.

Table 7.1 Proposed Alternative Water Supply Projects

Implementation	Quantity	Water Supply Project	Type	Notes
2020 (Completed)	0.83 mgd	Reuse Expansion Credits	Reuse	The City has installed reuse water connections to existing permitted groundwater users, which allowed a credit to the City's groundwater allocations.
2020 (Completed)	0.34 mgd(1)	Reclaimed Water Distribution System Expansion	Reuse	Reclaimed Water Distribution System Expansion: NE 16th Street to NE 24th Street and NE 23rd Avenue to Intercoastal Highway. This project was supported by the Cooperative Funding Program (LEC Planning Area, FY2018 to FY2022).
2020-2023 (Completed)	2.00 mgd	C-51 Reservoir	Stormwater (Groundwater Replenishment)	Recapture of stormwater for use in replenishing the canals/groundwater during the dry season. The City has approved funds for participation with up to 2 mgd of pro-rata capacity in the project.
2019-2029	1.52 mgd	Conservation through Reuse Expansion	Reuse	The City also plans to expand the reuse system over the next 10 years to serve new properties, resulting in the conservation of approximately 1.52 mgd(1) of potable water supply.
2025-2029		Reuse Connection Services	Reuse	This ongoing project provides reuse connection services to single family residential properties. This will lower our drinking water consumption.
2025	10.00 mgd(1)	Pompano-Broward Reclaimed Water Trunk Main	Reuse	Construct a 24-inch diameter reclaimed water trunk main to replace the current diversion from Broward's ocean outfall pipeline.
2027	3.50 mgd(1)	Reclaimed Water Storage Tank with Booster Station	Reuse	Construct a 3.50 MG reclaimed water storage tank with booster station.
2035	3.50 mgd(1)	Reclaimed Water Storage Tank	Reuse	Construct a 3.50 MG reclaimed water storage tank.
2035	5.00 mgd	WRF Expansion	Reuse	Construct a 5.00 MG WRF expansion.
2030	6.90 mgd	Reclaimed Water System Extension Program Phase VI+	Reuse	Construct multiple reclaimed water distribution projects completing a total of 6.90 mgd of distribution capacity by 2030.

Updated July 2025.

Notes:
(1) Project adds to the reclaimed water distribution system but does not increase actual water treatment capacity.

These projects, in addition to the City's base WUP allocations, are expected to provide at least 20.6 to 21.6 mgd of raw water supply to meet the projected future demand conditions. The following sections present more information about each of these projects.

7.2.1 Reuse Distribution System Expansion and Offset Credits

The City has plans to continue expanding its water reuse program through build-out, which is expected to be beyond 2045. Part of the program will be to replace current potable water used for irrigation with reuse water as a means of conserving potable water supplies. The City plans to construct approximately 7.5 miles of reuse water mains ranging from 4- to 16-inch diameter, and about a half mile of 30-inch diameter. The expected amount of reuse water that could be utilized through this expansion is 1.76 mgd according to calculations included in the 2025 Reuse Water Master Plan. This amount of water is anticipated to be directly conserved from potable water supplies, which could help delay the investment in additional alternative water supplies.

The City also appears to qualify for additional Biscayne Aquifer withdrawals by serving areas with reuse water that previously had groundwater use permits. The SFWMD views the replacement of Biscayne Aquifer withdrawal with an alternative water supply source as an "offset." The City plans to transfer the Biscayne Aquifer base condition water use pumpage or the permitted allocation of the irrigation wells, whichever is less, to the City's water use permit, as reuse water replaces irrigation water.

According to the SFWMD GeoHub, 0.71 mgd of total private well water allocations would have expired between January 2021 and June 2025, of which 0.147 mgd were from Biscayne Aquifer source and used for irrigation purposes. If allocation of all private WUP of wells on the Biscayne aquifer that are used for irrigation were transferred to the City's WUP upon private permit expiration due to provision of reuse water, a total offset of 1.71 mgd could be realized within the next 10 years. If, in addition, reuse water is provided to offset cooling and heating water with private wells, additional credit of 1.09 mgd could be secured. Supporting data for this estimate is included in Appendix B. If this new offset is added to the allocations the City currently has, the total allocations on a daily basis would increase to 22.53 mgd by 2035 and to 23.19 mgd by 2045.

7.2.2 C-51 Reservoir Project

In response to the water availability rule and the growing need for alternative water supplies, Pompano Beach and other LEC area water providers collaborated in the development of the Phase 1 of the C-51 Reservoir, to serve as a regional alternative water supply by storing excess wet season storm water runoff for later distribution and use during the dry season. The environmental benefits of this project include Biscayne Aquifer recharge, reduction of harmful tidal discharges to the Lake Worth Lagoon, and supplemental discharge to the Loxahatchee River. The C-51 Reservoir is an innovative P3 whereby interested LEC utilities and a private company jointly developed and constructed the project, which will be operated by the SFWMD. Each utility that invested in a pro-rata contribution of capital costs and operating and maintenance costs has received the respective storage allocation and credits for additional allocations in their WUP following construction.

The C-51 Reservoir project is proposed to be constructed in two phases. Phase 1 of the C-51 Reservoir consisted of a reservoir with 14,000 af of storage capacity and appurtenant facilities, which equates to an additional 35 mgd of allocations. The Second Phase is being planned and consists of an anticipated additional 46,000 af of reservoir storage capacity and appurtenant facilities.

Six utilities in the LEC area, including Pompano Beach, have participated in Phase 1 of this project. The primary interest in the project stems from the difficulty in providing and/or operating a system that meets the alternative water supply criteria. Some utilities are not positioned to provide reuse water, and treating alternatives supplies, like the Floridan Aquifer, can be cost prohibitive. The City has purchased a pro-rata portion of the Phase 1 C-51 Reservoir project, in an amount up to 2.0 mgd. The project was completed in 2023, and the subsequent allocation increase is reflected in the current City's WUP.

Although the City remains committed to expanding the reuse water program and has participated in the Phase 1 of the C-51 Reservoir Project as part of its AWS sources, it is anticipated that these efforts may not suffice in the long-term after the advent of the new NPDWR for six PFAS substances. The City has a capital project to address compliance through 2029 (NPDWR's short-term compliance schedule) without the need of additional raw water use than currently allowed by the City's WUP (after meeting Base Condition). However, by 2035 and because an increased ratio of raw-to-finished water will be required to treat PFAS, the City will investigate strategies that will include (but may not be limited to) additional withdrawal offsets from the C-51 Reservoir Project (e.g., Phase 2), offsets from expansion of the City's existing reclaimed water reuse system as shown in this WSFWP Update, and other alterative water supply opportunities.

7.3 BCWWS Alternative Water Supply Projects

According to the 2020 BC WSFWP, in addition to the continued use of traditional sources, conservation efforts, and the utility's reuse water facility, BCWWS has identified the utilization of the Floridan Aquifer as an alternative water source, and utilization of the ASR system. In addition, BCWWS has purchased capacity from the C-51 Reservoir project. Although these projects are not directly needed for future water supplies in the City of Pompano Beach (i.e. Districts 1 and 2), they are reviewed herein as an overview of the potential plans for the regional water supply.

7.3.1 BCWWS District 1

In District 1, raw water is treated at the District 1 WTP located in the City of Lauderdale Lakes prior to distribution to retail customers. The plant has a current capacity of 16.0 mgd to treat Biscayne Aquifer raw water using lime softening treatment. The District 1 wellfield is located in the area surrounding the WTP and is comprised of nine Biscayne Aquifer wells, with a total design capacity of approximately 23.5 mgd. Two Floridan Aquifer test wells were completed in 2014; one well is located on the WTP site and one is located in an easement northeast of the WTP.

BCWWS District 1 wellfield is permitted under Water Use Permit 06-00146-W, issued on September 15, 2020. The permit expires December 27, 2065. The permit allocates a total annual withdrawal from the Biscayne aquifer and the Upper Floridan aquifer of 3,989 MG (10.93 mgd) with a total maximum month allocation of 362.38 MG. This permit has a base condition from the Biscayne water allocation, which limits Biscayne allocation to 3,664 MG annually (10.04 mgd) and 333 MG maximum month. From September 15, 2020 through September 15, 2040, withdrawals from the Upper Floridan aquifer shall be limited to 1,043.90 MG annually (2.86 mgd) and 94.76 MG maximum month.

Based on the water use projections presented in the 2019 BCWWS WSFWP Update, District 1 is projected to have an average day finished water demand of 8.58 mgd in the year 2030 and an average day finished water demand of 9.14 mgd in the year 2040. Given that that the treatment recovery is projected to be approximately 95 percent, this means that approximately 9.04 mgd and 9.63 mgd of raw water will be needed for 2030 and 2040 respectively.

7.3.2 BCWWS District 2

In District 2, raw water is treated at the District 2 WTP located in the City of Pompano Beach prior to distribution to BCWWS retail customers and the City of Coconut Creek. The plant has a current capacity of 30.0 mgd to treat Biscayne Aquifer raw water using lime softening treatment. The District 2 WTP treats raw water supplied by the District 2 and the North Regional wellfields, where the District 2 wellfield has seven wells with a total design capacity of 27.1 mgd and the North Regional wellfield has 10 wells with a total design capacity of 20.2 mgd. Each wellfield provides approximately half of the total raw water to the treatment plant.

BCWWS District 2 wellfield is permitted under Water Use Permit 06-01634-W (District 2A and North Regional Wellfield) that was renewed on October 29, 2020. The permit expires December 27, 2065. The permit allocates a total annual allocation of 6,356 MG (17.41 mgd), with maximum monthly allocation of 580.55 MG. Between October 29, 2040 and December 27, 2065, without renewal of the base condition allocation, withdrawals from the Biscayne aquifer that are offset from the C-51 Reservoir, Phase 1 Project shall be limited to 730 MG (2 mgd) annually, and a maximum monthly allocation of 66.88 MG. Withdrawals from the Biscayne aquifer at District 2 are further restricted by wellfield. Based on the water use projections presented in the 2020 BC WSFWP, District 2 is projected to have an average day finished water demand of 13.38 mgd in the year 2030 and an average day finished water demand of 13.76 mgd in the year 2040. Given that that the treatment recovery is projected to be approximately 96 percent, this means that approximately 14.10 mgd and 14.51 mgd of raw water will be needed for 2030 and 2040 respectively.

7.4 BCWWS Alternative Water Supply Projects

7.4.1 Reuse

As mentioned in Section 4, BCWWS operates the Broward County NRWWTP located in the City of Pompano Beach. BCWWS, in compliance with the requirements of the ocean outfall legislation, developed the "Broward County Outfall Rule Detailed Plan North Regional Wastewater Treatment Plant Report," prepared by Hazen and Sawyer in 2013. This plan documents BCWWS's intent to produce an additional 21.45 mgd of reclaimed water. Of the total 21.45 mgd reclaimed water production in Broward County, 19.7 mgd will be produced at the NRWWTP, and the remaining reclaimed water will be produced through the Pompano Beach Reuse facility. A brief overview of the BCWWS reclaimed system projects are presented in Table 7.2.

Table 7.2 BCWWS Proposed Reclaimed Projects

Project	Description	Estimated Cost	Timeframe
NRWWTP Capacity Improvements	Includes 16-MG reclaimed water filter capacity expansion with high level disinfection and associated pumping facilities	$55.20 million	Completion 2023
NRWWTP Reclaimed Transmission Improvements	Includes construction of transmission and treatment facilities to provide approximately 10.5 mgd of reclaimed water to Palm Beach County and 3 mgd to North Springs Improvement District	$33 million	Completion 2021
NRWWTP Reclaimed Transmission Expansion	Includes construction of 4 miles of transmission main to Coconut Creek, and to connect with existing reclaimed piping in Hillsboro Pines	$12 million	Completion 2021
BCWWS District 2A RO WTP Expansion	Includes the expansion of the existing RO WTP by 6.00 mgd.	$33.34 million	Completion 2035

From 2023-2024 LEC Water Supply Plan. More recent data not available.

7.4.1.1 C-51 Reservoir

BCWWS has also invested in the C-51 reservoir alternative water supply project detailed above. BCWWS has associated 3 mgd of their total 6 mgd purchase with their South Regional Wellfield WUP to offset demands for raw water from their 3A/3BC service area. As per the SFWMD LEC 2023-2024 Water Supply Plan Update, BCWWS District 1 has a proposed allocation of 1 mgd, BCWWS District 2 has a proposed allocation of 2 mgd, and BCWWS-SRW has a proposed allocation of 3 mgd.

7.4.1.2 Floridan Aquifer Projects

BCWWS has also investigated the expanded use of the Floridan Aquifer system with respect to its long-term viability as a water supply resource through additional modeling and studies. BCWWS has, in cooperation with United Stated Geological Survey (USGS), completed the Phase 1 Feasibility Study of the Upper Floridan Aquifer in March 2014. The study compiled all available well information and commissioned a new well (G-2984) to be drilled, cored, and logged. The results from the well studies provided better definition of the stratigraphic and hydrogeologic characteristics of the aquifer, which will improve upon the selection of new well locations or for water storage options, such as ASR.

Building on the successful use of seismic profiling in the first study, Phase 2 of this Feasibility Study was commissioned and completed in 2017 (Cunningham et al., 2018). It further refined the hydrogeologic framework and regional extent of information by collecting high-resolution seismic profiles from canals in Broward County along with well logs and cores or cutting from 44 wells. Mapping of the Oldsmar, Avon Park, and Arcadia formations was completed over the 425-square-mile study area. As per the SFWMD LEC 2023-2024 Water Supply Plan Update, BCWWS District 2A proposes an increase in water supply from FAS of 6.00 mgd. This increase is pending the expansion of the 2A WTP project, referenced in Table 7.2, and the status of the C-51 Reservoir Phase I Project. BCWWS intends to keep monitoring the water demands to determine if project funding is feasible in the future.

7.4.1.3 Hillsboro Aquifer Storage and Recovery

The Hillsboro ASR system was built to capture excess surface water from the Hillsboro Canal, store it in the Upper Floridan Aquifer, and recover stored water back into the Hillsboro Canal when surface water levels are low. The ASR well was constructed in 2000 and consisted of a 24-inch diameter casing completed to a depth of 1,015 feet below land surface in the Upper Floridan Aquifer. The surface facilities were constructed between 2006 and 2007 and consisted of an intake/discharge structure, screen filters, ultraviolet (UV) disinfection units, pumps, piping, valves, electrical controls, and meters. The well was designed to recharge and recover approximately 5 mgd of surface water. The most recent cycle testing was completed in 2017, and the recovery efficiency was noted to be approximately 60 percent, and arsenic concentrations were below the regulated limits within three weeks. The SFWMD approached BCWWS following the completion of Cycle 4 to suggest a limited operation of the well facilities to support urban water supply demands, but BCWWS declined the offer of limited operation.

7.4.1.4 Secondary Canal Integration

Secondary canal integration remains as an urban water management strategy that BCWWS intends to pursue. Although the Northern Broward County Recharge System is not yet complete, there are three main projects identified that will be needed to complete the system.

- The C-1/C-2 Interconnect near Sample Road and the CSX Railroad. The project has been designed, and construction funding is being sought.
- The study of a potential C-4 Interconnect between north and south Tradewinds Park was completed and it was determined that the environmentally friendly directional drilling project is not financially feasible at the present time.
- The C-7 Interconnect just north of Sample Road in the Coconut Creek Main Street Project will coincide with development of the area. The basin divide control structure is being constructed with the development of the parcel just to the north of Sample Road. The interconnect will be complete when the final canal segment is built with the development of the remaining farmland.

Depending upon the final routing of water deliveries associated with development of the C-51 Reservoir project, additional construction may be required in the central and southern parts of Broward County to further integrate the system.

7.4.1.5 Conservation

BCWWS has implemented several conservation initiatives to extend BCWWS's current water supplies. These measures have been identified under the "Water Matters" campaign. These programs, targeted at various users, include: NatureScape Broward, Know the Flow, Water Matters Day, Conservation Pays, NatureScape Irrigation Service (NIS), and the NatureScape Broward School Board Environmental Partnership Agreement. The overall goal of the Water Matters program is to reach a sustained minimum 10 percent reduction in water use Countywide over 20 years. These are in addition to the changes in the building code and irrigation restrictions.

Table 7.3 presents the water conservation projects that BCWWS has listed in the SFWMD LEC 2023-2024 Water Supply Plan Update.

Table 7.3 BCWWS Water Conservation Project Summary

Project Name	Entity Name	Project Type	Fiscal Year	Proposed Water Savings (MGY)
USEPA WaterSense HET Replacement/ Credit Program	Broward County Board of County Commissioners	Indoor Plumbing	2013-2017	18.3
HET Rebate Program	Broward Water Partnership	Indoor Plumbing	2013-2017	42.2
NatureScape Irrigation Services Smart Irrigation Tech. Retrofit Program	Broward Water Partnership	Irrigation	2015-2017	66.8

Updated July 2020. More recent data not available.

HET – high-efficiency toilet; MGY – million gallons per year

The conservation programs detailed in the previous sections have a water savings goal of reducing the per capita consumption by 10 gpd by 2029, as established in the 2019 Integrated Water Resources Plan update.

7.5 10-Year Work Plan and Capital Improvement Plan

7.5.1 City's 10-Year Work Plan and Capital Improvement Plan

As demonstrated in the previous sections, the AWS plan proposed by the City should meet the increased water demands through 2035, as the first phase of the WTP upgrades are completed to comply with the NPDWR for six PFAS. The City is committed to fund the initial projects for the 10-Year Water Supply Facilities Work Plan. The City's 5-Year (2025-2030) Schedule of Capital Improvement Expenditures Plan is summarized in Table 7. The 5-Year Schedule of Capital Improvements presents the budgeted expenditures for the proposed AWS projects. The funds will be allocated to the projects through the City's water revenues and grants.

7.5.2 BCWWS 10-Year Work Plan and Capital Improvement Plan

As of April 2025, no amendments to the Broward NEXT2.0 Comprehensive Plan were noted that adopted a WSFWP Update after 2020. In the 2020 WSFWP Update, Broward County stated that BCWWS District 1 and District 2 facilities appeared to have sufficient water supplies to meet the increased water demands through 2030. As such, BCWWS has not committed funding to specific projects related to the Floridan Aquifer or ASR well. However, the City has committed to the C-51 Reservoir project and is expanding the reclaimed system for both the NRWWTP and the City's Reuse WTP. A summary of BCWWS's CIP was not available as of the time of completion of this report.

7.6 Summary

The City plans to meet future water demands by expanding the existing reuse system to different areas of the City and increasing the number of reuse water users. This program, along with the City's conservation program, is estimated to continue to reduce historical per capita water demands. The City has also purchased 2 mgd of capacity in Phase 1 of the C-51 Reservoir project. Table 7.5 summarizes the City's water facilities capacity and the anticipated future permitted amount.

BCWWS Districts 1 and 2 will serve the Pompano Beach areas not served by the City's Utilities Department. As of July 2025, no amendments to the Broward NEXT2.0 Comprehensive Plan were noted that adopted a WSFWP Update after 2020. Therefore, the 2020 WSFWP Update of BCWWS was used in this report. In that 2020 report, Broward County stated that BCWWS Districts 1 and 2 appear to have enough treatment capacity and Biscayne groundwater allocations to the projected future water demands. BCWWS also has the potential to utilize the Floridan Aquifer via the construction of new Floridan wells and treatment facilities if needed. Two alternative water supply upper Floridan aquifer wells were constructed and could provide raw brackish water for future membrane treatment. Additionally, BCWWS could utilize a portion of their C-51 reservoir offsets for the District 2/ North Regional Wellfield in the future.

Table 7.4 City of Pompano Beach Alternative Water Supply Capital Improvement Program Summary

Project Name	CIP Budgeted Expenditure					Five-Year Total
	FY 2025	FY 2026	FY 2027	FY2028	FY2029	
Reuse Distribution System Expansion	$425,000	$425,000	$3,000,000	$3,000,000	$3,000,000	$9,850,000
Reuse Connection Services	$145,000	$145,000	$145,000	$145,000	$145,000	$725,000
Reuse Ground Storage				$1,500,000	$6,250,000	$7,750,000
Water Conservation Program			$100,000			$100,000
Well Maintenance Program(1)	$250,000	$250,000	$150,000	$150,000	$150,000	$950,000
Deep Well Monitoring Well Replacement(1)	$3,950,000					$3,950,000
Emerging Contaminants(1)	$10,000,000	$20,000,000	$41,500,000		$1,500,000	$73,000,000

Updated July 2025.

Notes:
(1) Not an AWS project, but a directly related water supply project.

Table 7.5 City of Pompano Beach Projected Water Demands and Supply Summary

Year	2025	2030	2035	2045	2065
City's Water Service Area Population	99,836	108,090	112,152	117,430	119,427
Average Annual Daily Raw Water Demand (mgd)	16.12	20.83	21.52	22.44	22.78
Average Annual Finished Water Demand (mgd)(1)	15.07	17.08	17.65	18.40	18.68
Available Treatment Surplus (mgd)(2)	33.88	29.91	8.37	7.45	7.11
Approved Alternative Water Supply Offsets (mgd)(3)	1.34	1.34	1.34	--	--
Permitted Biscayne Aquifer Withdrawals Base Condition (mgd)(4)	18.39	18.39	18.39	20.39	20.39
Anticipated Raw Water Reserve Surplus (mgd)(5)	2.19	-2.44	-3.13	-2.05	-2.39

Updated July 2025.

Notes:
(1) Includes large user demands.
(2) Calculated by subtracting the average annual raw daily demand from the treatment plant capacity (50 mgd currently, 30 mgd upon decommissioning of lime softening plant).
(3) Projected based on the expected reuse credits and C-51 Reservoir credits detailed previously. Additional alternative water supplies such as conservation may also be realized in the future.
(4) Projected based on the existing allocations plus the expected reuse credits and C-51 Reservoir credits detailed previously starting in 2025.
(5) Calculated by subtracting the average annual daily raw water demand from the permitted (and projected) Biscayne Aquifer withdrawals.

CHAPTER 8 COMPREHENSIVE PLAN

8.1 Goals, Objectives, and Policies

The City's Comprehensive Plan will support this WSFWP by updating the goals, objectives, and policies of the Potable Water and Conservation Elements, and are included in the following sections.

8.1.1 Potable Water Element Component

The Potable Water Element discusses methods on how the City will be providing safe, reliable drinking water and reuse services to the public. Updates to this component are related to the results of population projections, data, and analysis of trends in water production and consumption, updated reference documents such as the latest Master Plans for Water and Reuse, LEC Plan Update, and the Concurrency Design Table.

The full list of existing and proposed goals, objectives, and policies for the Potable Water Element component are part of Appendix H.

8.1.2 Conservation Element Component

The Conservation Element discusses efforts to protect and effectively manage natural resources in the City. Updates to this component are related to ground water quality and ways to utilize it in a more efficient and innovative manner.

The full list of existing and proposed goals, objectives, and policies for the Conservation Element component are part of Appendix I.

8.2 Related Amendments

8.2.1 Water Element Component

Updates to the Potable Water Element component that are directly related to this WSFWP update include the following:

- The LOS standards have been modified from 161 gpcd to 141 gpcd. Historical consumption data and service area historical population were analyzed to determine the LOS standards. Further detail on how the updated LOS was determined is discussed in Section 5.5 of this WSFWP.
- The WTP increased production of finished water from a recorded 14.69 mgd in 2019 to 15.16 mgd in 2024.
- The City has adopted Broward County's maximum allowable water usage factors for the various establishments as it appears in Boward County's Guideline for Determining Ability to Provide Potable Water and Wastewater Service (BCWWS, April 2012) - Section "Potable Water," Subsection "Average Day Demand" in lieu of the City's own concurrency design table that had been included in the 2020 WSFWP. The Boward County's Guideline for Determining Ability to Provide Potable Water and Wastewater Service (BCWWS, April 2012) is included in this report as part of Appendix J.

Necessary amendments to the Potable Water Element of the Comprehensive Plan have been identified and listed in Table 8.1. These amendments are being incorporated and adopted into the Element. Other content will be amended as part of the Comprehensive Plan Update that is being performed by the City concurrently with this Work Plan. Such content may be reviewed in Appendix H.

8.2.2 Conservation Element Component

Necessary amendments to the Conservation Element of the Comprehensive Plan that are directly related to this WSFWP update have been identified and listed in Table 8.2. These amendments are being incorporated and adopted into the Comprehensive Plan. Other content will be amended as part of the Comprehensive Plan Update that is being performed by the City concurrently with this Work Plan. Such content may be reviewed in Appendix I.

Table 8.1 Potable Water Element Amendments Directly Related to this WSFWP Update

Location within Previous Potable Water Element Document	Previous Content	Amended Content
Goal 7A, Objective 2	The City of Pompano Beach shall maintain the LOS standards at 161 or less gallons per capita per day; the BCWWS District 1 LOS is 112 gpcd and the BCWWS District 2 is 96 gpcd.	Objective 07A.02.00 The City of Pompano Beach shall maintain the ***LOS*** standards at ***141*** or less ***gpcd***; *the BCWWS District 1 LOS is 112 gpcd and the BCWWS District 2 is 96 gpcd.*
Goal 7A, Objective 2, Policy 4	The design capacities and current (2019) demands for the Pompano Beach Water Facility and the Broward County Water Facilities 1A and 2A are as follows: Pompano Beach Water Treatment Capacity Lime Softening Plant 40.00 mgd in Design Capacity Membrane Plant 10.00 mgd demand in 2019 Total 50.00 mgd in Design Capacity 15.41 mgd in 2019 demand Broward County Water Treatment Capacity 2A Plant 40.00 mgd in Design Capacity 12.9 mgd in 2019 demand 112 gpcd generation rate (2019) 1A Plant 16.0 mgd in Design Capacity 7.45 mgd in 2019 demand 96 gpcd generation rate (2019)	Policy 07A.02.0 The design capacities and current ***(2025)*** demands for the Pompano Beach Water Facility and the Broward County Water Facilities 1A and 2A are as follows: Pompano Beach Water Treatment Capacity Lime Softening Plant 40.00 mgd in ***design capacity, to be decommissioned.*** Membrane Plant 10.00 mgd demand***, to be expanded to 30 mgd.*** ***15.07*** mgd in ***2025*** demand Broward County Water Treatment Capacity 2A Plant 40.00 mgd in Design Capacity 12.9 mgd in 2019 demand 112 gpcd generation rate (2019) 1A Plant 16.0 mgd in Design Capacity 7.45 mgd in 2019 demand 96 gpcd generation rate (2019)

Location within Previous Potable Water Element Document	Previous Content	Amended Content
Goal 7A, Objective 4, Policy 10	Policy 07A.04.10: Where new potable water service is required, it shall be the responsibility of the developer to adhere to the City approved Concurrency Design Table, which states the maximum allowable water usage factors for various establishments.	***Policy 07A.04.10: Where new potable water service is required, it shall be the responsibility of the developer to adhere to the City's maximum allowable water usage factors for the various establishments, which is as it appears in Boward County's Guideline for Determining Ability to Provide Potable Water and Wastewater Service (BCWWS, April 2012) - Section "Potable Water", Subsection "Average Day Demand."***
Goal 7A, Objective 5, Policy 3	Continue to invest a minimum of $400,000 per year in the construction of reuse distribution lines for the Water Reuse plant to enable residents, businesses and city properties to utilize reuse water for outdoor irrigation.	Policy 07A.05.03: Continue to invest a minimum of ***$425,000*** per year in the construction of reuse distribution lines for the Water Reuse plant to enable residents, businesses and city properties to utilize reuse water for outdoor irrigation.
Goal 7A, Objective 5, Policy 6	To decrease potable water usage for irrigation and reduce treated wastewater disposal demand, consider enacting a mandatory reuse connection for all residential properties like the one that exists for multifamily, commercial, and LHP customers.	Policy 07A.05.06: To decrease potable water usage for irrigation and reduce treated wastewater disposal demand, ***newly constructed single-family developments are required to construct reclaimed water distribution mains and are required to connect to the system when reclaimed water service becomes available. Connection to the system is currently voluntary for existing single-family properties and mandatory for multi-family and commercial within the City; however, a monthly availability charge is assessed where reclaimed water service becomes available. Connection is mandatory for all types of properties within the Lighthouse Point serviced area.***
Goal 7A, Objective 5, Policy 7	Install reuse distribution lines at a rate to meet the needs identified in the Lower East Coast Water Supply Facilities Work Plan for 2040.	Policy 07A.05.07: Install reuse distribution lines at a rate to meet the needs identified in the Lower East Coast Water Supply Facilities Work Plan for ***2045.***
Goal 7A, Objective 6, Policy 4	Participate on the C-51 Reservoir Alternative Water Supply (AWS) Project Phase I by whatever means appropriate and approved by City Commission.	Policy 07A.06.04: ***Consider further participation in*** the C-51 Reservoir Alternative Water Supply (AWS) Project ***by exploring its Phase II***.
Goal 7A, Objective 7, Policy 4	Encourage the planting of "Florida Friendly" plants and support "Florida Friendly Best Management Practices for Protection of Water Resources by Green Industries, 2015".	Policy 07A.07.04: Encourage the planting of "Florida Friendly" plants and support "Florida Friendly Best Management Practices for Protection of Water Resources by Green Industries, ***2020***".

Location within Previous Potable Water Element Document	Previous Content	Amended Content
Goal 7A, Objective 8, Policy 2	The City shall adhere to the restrictions of the Consumptive Use Permit.	***Pursue a modification of the Consumptive Use Permit to address limitations that may restrict the City's ability to comply with the PFAS National Primary Drinking Water Regulation by 2030.***
Goal 7A, Objective 10, Policy 5	To ensure coordination of the Comprehensive Plan with the Lower East Coast Water Supply Plan (LECWSP) Updates, continue to adopt the necessary updates to the Water Supply Facilities Work Plan (Work Plan) within 18 months of any adopted update to the LECWSP. The City hereby adopts by reference the 2020 Water Supply Facilities Work Plan which covers a planning period of not less than 10 years and addresses issues that pertain to water supply facilities and requirements needed to serve current and future development within the City. The City shall review the plan every 5 years within 18 months after the governing board of the SFWMD approves any updates to the LECWSP. Any changes affecting the Work Plan shall be included in the Capital Improvements Plan to ensure consistency between the Potable Water Sub-Element and the Capital Improvements Element.	To ensure coordination of the Comprehensive Plan with the Lower East Coast Water Supply Plan (LECWSP) Updates, continue to adopt the necessary updates to the Water Supply Facilities Work Plan (Work Plan) within 18 months of any adopted update to the LECWSP. ***As of October 2025,*** the City hereby adopts by reference the ***2025*** Water Supply Facilities Work Plan ***(available at the following link: Pompanobeachfl.gov/compmap/WaterSupplyPlan2025),*** which covers a planning period of not less than 10 years and addresses issues that pertain to water supply facilities and requirements needed to serve current and future development within the City. The City shall review the plan every 5 years within 18 months after the governing board of the SFWMD approves any updates to the LECWSP. Any changes affecting the Work Plan shall be included in the Capital Improvements Plan to ensure consistency between the Potable Water Sub-Element and the Capital Improvements Element.
Goal 7B, Objective 2, Policy 4	Continue to enforce mandatory reuse zones for commercial and multifamily property irrigation when reuse water is available.	Continue to enforce mandatory reuse zones for commercial and multifamily property irrigation***, and for newly constructed multi-family property irrigation,*** when reuse water is available.

Table 8.2 Conservation Element Amendments directly Related to this WSFWP Update

Location within Previous Conservation Element Document	Current Content	Amended Content
Goal 10, Objective 2, Policy 10.02.02	The City shall encourage the appropriate agencies to monitor wastewater discharged into the ocean to assure compliance with secondary wastewater standards and ensure all ocean outfalls are terminated by the 2025 deadline.	***No discharge of wastewater or secondary treated effluent shall be made into the ocean after 2025 to comply with the Ocean Outfall Legislation.***
Goal 10, Objective 3, Policy 10.03.02	The eastern and western wellfield production quantity and quality shall be monitored for the protection of the groundwater supply.	The eastern and western wellfield production quantity and quality shall be monitored for the protection of the groundwater supply ***per SFWMD's Consumptive Use Permit Special Conditions.***
Goal 1, Objective 3, Policy 09.03.06	Policy 10.03.06 The City shall continue to participate in Alternative Water Supply projects included in the 10-Year Water Supply Plan such as reuse, the C-51 Reservoir, concentrate recovery and other potential AWS projects.	Policy 10.03.06 The City shall continue to participate in Alternative Water Supply projects included in the 10-Year Water Supply Plan such as reuse, the ***potential Phase II of the*** C-51 Reservoir, ~~***concentrate recovery***~~ and other potential AWS projects.

Updated August 2025.

CHAPTER 9 SUMMARY AND CONCLUSIONS

Local governments are mandated by Florida Legislature to submit a WSFWP to ensure linkage between the Regional Water Supply Plan and their individual comprehensive plans. The WSFWP is to address infrastructure and conservation requirements, needed capital improvements, and intergovernmental and water supplier coordination. It is required that the WSFWP be updated every 5 years, or within 18 months after the Governing Board adoption of an updated Regional Water Supply Plan so that the local plan reflects the changes of the regional plan.

This WSFWP has been prepared for the City of Pompano Beach. The purpose of this WSFWP is to assess the City's current water sources and existing facilities and evaluate their adequacy to meet the projected future raw and treated water demands. The WSFWP development will facilitate the required coordination efforts for water supply and land use planning between the City's Planning and Zoning Department and Utilities Department, the SFWMD, BCWWS, and each of the water-receiving local governments, which include the City of LHP and Town of LBTS.

9.1 City Service Area

The City covers the area extending from the Atlantic Ocean to Florida's Turnpike and from Sample Road to McNab Road in northeast Broward County. The City has a total area of 25 square miles of which 1.4 square miles are water. As of April 2024, the City's Planning and Zoning Department reported a population of 114,703. The City's utility service area, including water, wastewater, and reuse, varies from the jurisdictional area. The water utility service area serves 19 square miles consisting of a large portion of the City, along with neighboring municipalities - City of LHP and Town of LBTS. The remainder of the City is served by BCWWS or private suppliers.

BCWWS Districts 1 and 2 supply potable water to portions of the City that are not served internally. As such, the City residents served by BCWWS are direct customers of BCWWS.

Private well users within the service area, which are shown in the map of Appendix B, receive a portion, if not all, of their water supply from non-municipal water, mostly for irrigation use for landscaping or maintenance of golf courses.

9.2 Existing Potable Water Facilities

9.2.1 Raw Water Allocation

City Owned: The City's source of potable water originates from the Biscayne Aquifer. The City utilizes the Biscayne Aquifer system for public water supply use under WUP No. 06-00070-W, which was reissued by the SFWMD on December 8, 2020. This permit will expire on December 27, 2065. The WUP provides raw water supplies to the City's WTP via 25 wells with an annual allocation not to exceed 7,200 MG and a maximum month allocation not to exceed 690 MG. The 25 wells are divided into two wellfields, the Eastern Wellfield (Airport Wellfield) and the Western Wellfield (Palm-Aire Wellfield). The WUP restricts withdrawals from the Biscayne Aquifer by wellfield as follows:

- The Eastern Wellfield has a permitted annual allocation of 2,697 MG. Monthly withdrawals are limited to 186 MG during the dry season (November 1 to May 31). From June 1 through October 31 of each year, monthly withdrawals from the Eastern Wellfield cannot exceed 279 MG.
- The Western Wellfield has a permitted annual allocation of 4,015 MG and a maximum month allocation of 394.8 MG. The Western Wellfield does not have seasonal withdrawal limitations like the Eastern Wellfield. However, the allocation from participation in the C-51 Project only applies to withdrawals from the Western Wellfield. Permit conditions have now been met that allow the annual allocation for the Western Wellfield to be increased to 4,503.0 MG annually and with a maximum monthly allocation of 495.3 MG.

BCWWS Owned: The BCWWS District 1 and 2 water supply system is comprised of three SAS wellfields - District 1, District 2 North Regional, and the District 2 (2A) Wellfields. They are located near the District 1 WTP in Lauderdale Lakes, Deerfield Beach and Pompano Beach, respectively. The District 1 wellfield operates under SFWMD WUP No. 06-00146-W. The District 2 Wellfield operates under SFWMD WUP No. 06-01634-W. Both BCWWS permits have an expiration date of December 27, 2065.

Table 9.1 summarizes allocation based on wellfield and permit.

Table 9.1 Wellfield Permit Allocation

Wellfield	Owner	Location	Source	Permit No.	Maximum Annual (MG)	Maximum Month (MG)
Eastern and Western	Pompano Beach	Pompano Beach	Biscayne Aquifer	WUP No. 06-00070-W	7,200	690
District 1	Broward County	Lauderdale Lakes	Biscayne and Floridan Aquifers	SFWMD WUP No. 06-00146-W	3,989	362.38
District 2 - North Regional & 2A(2)	Broward County	Deerfield Beach & Pompano Beach	Biscayne and Floridan Aquifers	SFWMD WUP No. 06-00146-W	6,356	580.55

Updated November 2025.

Two upper FAS test wells are being installed near District 1 to develop raw water treatment method appropriate for FAS water quality. They are being done as possible alternative water supply wells. Use of FAS has not yet been evaluated for District 2.

9.2.2 Facilities

The City WTP is located north of 12th Street between Northeast 3rd Avenue and Northeast 5th Avenue in Pompano Beach. The treatment plant has two parallel treatment processes - conventional lime softening and nanofiltration membrane softening - with design capacities of 40 mgd and 10 mgd, respectively, for a total design capacity of 50 mgd.

The lime softening plant receives water primarily from the Eastern Wellfield and comes equipped with a single sludge thickener basin for lime sludge thickening and vacuum filters. The raw water enters the solids contact softening clarifiers where water is softened and then sent to the multimedia gravity filters. The filtered water flows to the clearwell for disinfection using chlorine and ammonia. The finished water is then sent out to the distribution network or to onsite storage tanks depending on water demand needs. Sludge produced is hauled offsite for disposal. The process has a high production yield and is 97 percent efficient.

The nanofiltration membrane process receives raw water from the Western Wellfield and comes equipped with filters, membrane units, and degasifier units. The process is heavily reliant on various chemical processes and has a production yield of roughly 80 percent. Once the raw water passes through the multistep process, the effluent treated water is sent to the clearwell to blend with effluent from the lime softening plant.

The City WTP has one blending clearwell/contact chamber where effluent from both plants blend prior to disinfection. The disinfected water may then enter the distribution system and flow to onsite storage tanks. The treatment plant has two 5-MG ground storage tanks designed to buffer the water production process from the water distribution system. There is also a remote 1 MG ground storage tank located at Indian Mound Park. It is overturned daily for fire flow emergency use and to improve water quality.

Table 9.2 summarizes the water storage facilities.

Table 9.2 Water Storage Facilities

Location	Description	Capacity (MG)	Amount	Total Capacity (MG)
Water Treatment Plant	Clearwell	2.0	1	2.0
Water Treatment Plant	Ground Storage Tank	5.0	2	10
Indian Mound	Ground Storage Tank	1.0	1	1.0
			Total	**13**

Updated July 2025.

The City water distribution system consists of approximately 290 miles of water lines ranging from 2 to 36 inches in diameter. Pipe material varies. However, 24 percent is polyvinyl chloride (PVC) pipe. There are pockets of cast iron and galvanized iron to ductile iron, depending on age and location of the pipes.

The City utilizes a Class I IWS for disposal of brine waste for the nanofiltration process. The IWS at the WTP is permitted for 6.9 mgd (Permit No. 0167214-009-UO/1X). The permit was issued on October 25, 2022, and expires on October 25, 2027. The permit requires the City to demonstrate mechanical integrity of the IWS at least once every 5 years. Alternative (backup) disposal is via the sanitary sewer to Broward County's NRWWTP.

9.3 Existing Reclaimed Water System

There are two reuse water systems within the City limits. One is operated by the City and the other is operated by the BCWWS NRWWTP. The City's RWTF is located at 1799 North Federal Highway in Pompano. The reuse facility is located at 2401 North Powerline Road. Both facilities treat effluent from the BCWWS.

The City's reuse facility is also known as OASIS, which stands for "Our Alternative Supply Irrigation System." It has a current rated capacity of 7.5 mgd and there are future plans to expand the facility. The facility operates under the FDEP Permit No. FLA013581.

Effluent from the BCWWS is filtered via deep bed sand filters and receives high level chlorine disinfection to meet public access reuse standards. There are two storage tanks onsite where the treated water is stored prior to being pumped into the reuse distribution system. The total storage capacity provided for reuse is 6.0 MG, and the City's current annual average demand was measured to be approximately 2.57 mgd. Currently, reuse water is used for landscape irrigation purposes.

The City's reuse distribution system is comprised of approximately 37 miles of pipe ranging from 4 to 30 inches in diameter. There are 2,105 reuse connections in the system as of September 2024, 1,740 of which are active and 365 are inactive. The number of total connections has increased by approximately 70 percent since the last reported count in the 2020 WSFWP Update. Future reuse demands are anticipated to increase to 4.11 mgd in the 20-year planning period, along with future expansion of the distribution system as per the 2025 City Reuse System Master Plan.

The City regulates reuse water through the Code of Ordinances, Chapter 54, "Reuse Water and Cross-Connection Control" and the Broward County Code of Ordinances, Chapter 36, "Water Resources and Management," Article II "Water Emergencies." The City has a large user agreement with the southern portion of the City of LHP and with Broward County.

9.4 Data and Analysis

9.4.1 Population Projections

Projected raw and finished water demands for the City's utility service area were determined for the existing condition, a 5-year outlook (2030), a 10-year outlook (2035), a 20-year capital planning horizon (2045), and ultimate buildout (2065). Ultimate buildout projections are provided for consistency with requirements set forth by the SFWMD for utilities participating in the C-51 Reservoir alternative water supply (AWS) effort.

Because population projections had been reevaluated in 2022 for the filing of the City of Pompano Beach WUP modification (after City Commission approval of City's participation in the C-51 Project), such projections were used as a base for the projections shown in this 2025 WSFWP, then adjusted to reflect the actual 2023 and 2024 population as reported to BEBR by the City of Pompano Beach Planning Department, and lastly updated to include: 1) new development as envisioned by the same Department, and 2) latest population projections for LHP and LBTS, proportion-adjusted to only the served area. The WUP modification, in turn, utilized a series of sources consisting mainly of the 2020 WSFWP.

Table 9.3 summarizes the population projections for the City's utility service area through 2045.

Table 9.3 Water Service Area Population Projections Summary

Areas Served by City of Pompano Beach Utilities Department	2025	2030	2035	2040	2045
City of Pompano Beach(1)	95,895	104,193	108,298	111,035	113,636
Lighthouse Point(2)	1,306	1,290	1,275	1,270	1,266
Lauderdale-By-The-Sea(2)	2,635	2,607	2,579	2,554	2,528
Total Service Area	99,836	108,090	112,152	114,859	117,430

Updated July 2025.

Notes:
(1) From projections used in 2022 for the WUP modification and adjusted per current and projected development by Planning and Zoning Department.
(2) Per 2024 PFAM projections, proportion-adjusted to served area.

9.4.2 Finished and Raw Water Demand Projections

Level of Service: The finished water LOS standard adopted by the City is 141 gpcd, which is based on water production data and population from January 2019 through July 2024 (past 5 years), after the meter replacement project took place at the WTP in 2018.

Finished Water Demand Projections: The water demand projections for the City's utility service area were determined for the various planning periods using the LOS of 141 gpcd, population projections, and the addition of identified "large user" demands. Maximum day, maximum month, and peak hour demands were further determined using calculated peaking factors with respect to annual average demands. These factors were calculated using five years of treatment plant SCADA information.

Identified "large users" refers to 12 nonresidential users with rather constant demands that are independent of population.

Table 9.4 summarizes the finished water demand projections.

Table 9.4 Finished Water Demand Projections

Year	Projected Service Area Population	Annual Average(1)	Annual Average with Large Users(2)	Maximum Month	Maximum Day	Peak Hour
		Peaking Factors				
				1.11	1.35	1.71
		Projected Water Demands (mgd)				
2025	99,836	14.08	15.07	16.72	20.34	25.76
2030	108,090	15.24	17.08	18.96	23.06	29.21
2035	112,152	15.81	17.65	19.60	23.83	30.19
2040	114,859	16.20	18.04	20.02	24.35	30.84
2045	117,430	16.56	18.40	20.42	24.84	31.46
2050	119,027	16.78	18.62	20.67	25.14	31.85
2055	119,427	16.84	18.68	20.73	25.22	31.94
2060	119,427	16.84	18.68	20.73	25.22	31.94
2065	119,427	16.84	18.68	20.73	25.22	31.94

Notes:
(1) Per capita demand factor of 141 gpcd applied.
(2) Includes projected demands of large users as summarized in Table 5.5.

Raw Water Demand Projections: Annual raw and finished water data from historical WTP MOR data were collected for 2019 to 2024. Raw to finished water ratios were determined annually for the 5-year period. An average ratio of raw to finished water was calculated to be 1.07. In past WSFWP updates, the City of Pompano Beach had historically used this ratio to project raw water demand through the planning horizon. However, due to the advent of the NPDWR for six PFAS, it is expected that this ratio will change in the future, yielding the need for increased raw water demand.

To address this regulation and its repercussion on water supply, the City of Pompano Beach has performed a Water Facilities Plan: Emerging Contaminants Water Treatment Plan Upgrades (McCafferty Brinson, 2024) study through a consultant to pilot test and conceptualize the technology, the potential capital investment, and the raw water demand needs. Subsequently, the City commissioned the preliminary design of the facilities. A Preliminary Design Report for the Water Treatment Plan Upgrades, 90% Submittal (McCafferty Brinson, June 2025) expects a higher ratio of raw water to finished water to address NPDWR.

In general, the study proposed a WTP upgrades project that will consist of a phased program. The first phase will consist of building-out the membrane treatment capacity to a total of 30 mgd (from 10 mgd). Decommissioning of the existing 40-mgd lime softening (LS) process would be performed as part of a separate phase of this program. It is intended that the raw water necessary for this expansion is supplied by use of the Biscayne Aquifer through the City's wellfield infrastructure. A hydrogeologic modeling study will be commissioned to determine wellfield operations to substantiate availability as part of permitting procedures. However, strategies will be investigated and pursued under this program that will include (but may not be limited to) additional withdrawal offsets from the C-51 Reservoir Project (e.g., Phase 2), offsets from expansion of the City's existing reclaimed water reuse system as shown in this WSFWP Update, and other alterative water supply opportunities.

Table 9.5 summarizes raw water demand projections under annual average and maximum day conditions that resulted from this study and the subsequent Preliminary Design Report for the Water Treatment Plan Upgrades, 90% Submittal (McCafferty Brinson, June 2025).

Table 9.5 Raw Water Demand Projections

Year	Annual Average Demand (AAD)	Maximum Day Demand (MDD)
Current Treatment Processes and Current Water Supply(1)		
2025	16.12	21.76
WTP Upgrades(2)		
2030 (5-year)	20.83	28.12
2035 (10-year)	21.52 total	29.05 total
2045 (20-Year)	22.43 total	30.28 total
2065 (Build-out)	22.78 total	30.75 total

Updated July 2025.

Notes:
(1) Historical raw to finished water ratio of 1.07 applied.
(2) Buildout of the existing NF membrane facility at 82% recovery and decommission of lime softening process to comply with NPDWR for six PFAS and its compliance schedule. Uses current Biscayne water allocation.

9.4.3 Reclaimed Water Demand Projections

The City's reuse water demand projections were recently updated as part of the 2025 Reuse Water System Master Plan Update. Similar to the methodology used in the 2014 Reuse Master Plan, this update delineates reuse zones based on geographical significance. The projections were based on three distinct types of users, including: 1) inactive accounts, 2) proposed residential customers (single family residential), and 3) future large users (multi-family residential, commercial, etc.). To estimate the future demands, the estimated number of users for each service type within each reuse zone was determined.

Table 9.6 summarizes the City's reuse water standard LOS.

Table 9.6 Summary of City of Pompano Beach Reuse Water Standard Level of Service

Criteria	2025 Actual Level of Service
Single Family Use	364 gpd
Multi-Family Use	60 gpd per unit
Parks	0.01 gpd per square foot
Commercial	0.30 gpd per square foot

Updated February 2025.

Table 9.7 presents the projected average day reuse demands for the 5-year (2030), 10-year (2035), 20-year (2045), and build-out timeframes.

Table 9.7 Projected Average Day Reuse Demands for the Planning Horizon

Reuse Zone (Figure 4.2)	2023 ADD (mgd)(1)	Year 5 ADD (mgd)	Year 10 ADD (mgd)	Year 15 ADD (mgd)	Year 20 ADD (mgd)	Build-Out ADD (mgd)(2)
Zone 5	0.13	0.35	0.57	0.78	1.0	01.0
Zone 5E	0.01	0.08	0.08	0.08	0.08	0.08
Zone 6	-	-	-	-	-	0.59
Zone 7	-	-	-	-	-	0.01
Zone 9	-	-	-	-		0.06
Zone MU (Golf Course)	1.30	1.30	1.30	1.30	1.30	1.30
Total with MU	2.57	3.17	3.52	3.82	4.11	5.35
Total excluding MU	1.27	1.88	2.22	2.53	2.81	4.05

Source: 2025 Reuse Water Master Plan (Tetra Tech, 2025). Updated February 2025.

Notes:
(1) 2023 ADD values are based on existing data.
(2) Zones 6, 7, and 9 are not expected to connect until after the 20-year planning horizon.

9.4.4 Water Conservation and Water Loss Monitoring

The City's water conservation program encourages both conservation of water and the use of alternative water supplies. The City is proactive in providing public information to residents that aim to educate and bring awareness of the importance of water conservation. The following include the water conservation programs available in the City:

- OASIS Reuse Infrastructure and Program.
- "I Can Water Campaign".
- Public Information Program.
- Dropcountr Application.
- Leak Prevention and Detection Program (LP/DP).
- System Maintenance.
- Automatic Flushers.
- Broward County Mobile Irrigation Lab (BC MIL).
- Residential Irrigation Rebate Program.
- Conservation Rate Structures
- Metering and Water Efficiency Tracking.
- Retrofit Program.
- In-Plant Initiatives.
- City Staff Education and Activities.
- YRR.
- Conservation as Regulatory Objective.

The City's emphasis on conservation can be directly observed by taking note of the conservation ordinance development which is part of the City's overall Conservation Program as required by the Limiting Condition of the WUP.

The City monitors water loss by comparing treated water volumes metered leaving the WTP to billed water data and reports this comparison to the SFWMD annually as unaccounted-for water losses. The calculated average water loss for 2023 was 12.64 percent. However, since 2019, the annual average has been as low as 10.70 percent. Recent efforts taken to reduce water loss included:

- Preparation of a bond issuance to replace older water mains and customer water meters with AMI.
- Conducted an external audit for customer billing system to examine accuracy of records.
- Potential leaks in the system have been identified by a third party leak detention company contracted by the City.
- Large meters ranging from 3 to 10 inches in diameter have been tested and repaired as needed between 2020 and 2024. An increasing number of meters have been tested each year (from 130 meters in 2020 to over 300 meters in 2024).
- The City participated in the FDEP/AWWA Water Loss Audit Training.

9.5 Intergovernmental Coordination Activities

9.5.1 SFWMD Regional Water Supply Plan

The City has reviewed the SFWMD 2023-2024 LEC Plan Update and identified projects located within the City's utility service area. In response to both documents, a letter has been drafted to the SFWMD that summarizes the identified projects and their current status. The letter is part of Appendix G and includes projects for all applicable sections of this WSFWP 2025 Update.

9.5.2 2020 Broward County 10-Year Water Supplies Facilities Work Plan

The City has reviewed the 2020 BC WSFWP, and identified projects located within the City's utility service area. The document used has been included as part of Appendix A. As of April 2025, no amendments to the Broward NEXT2.0 Comprehensive Plan were noted that adopted a WSFWP Update after 2020.

9.6 Water Supply Facilities Work Plan

The City's WSFWP contained in Chapter 7 of this report consists of information pertaining to the City's Capital Improvements Program and the City's future water service area demands. The planning horizon required by the SFWMD for this WSFWP is from 2025 to 2035.

9.7 Comprehensive Plan

The Comprehensive Plan is being updated with information that will support this updated WSFWP. Components included as part of the Comprehensive Plan update include the Potable Water and Conservative Elements. The goals, objective, and policies for each component have been updated and identified to reflect the WSFWP. The full list of existing and proposed goals, objectives, and policies for each component are included as part of Appendices H and I.

9.8 Conclusions

The City may require an upgrade of the treatment processes based on the advent of the NPDWR for six PFAS. Raw water allocation sufficient for the change in technologies will be necessary to cover the projected demands past the 5-year planning horizon of this WSFWP. The City also has several capital improvement projects to address reliability and to refurbish or replace aging equipment. The proposed projects are included as part of the City CIP projects list.

The City also plans to meet future water demands by exploring alternative water supplies, expanding the existing reuse system to different areas of the City, and increasing the number of reuse water users. Some conservation efforts include reducing potable water and increasing reuse water use for irrigation, along with educating users on the conservation of water. Details for each alternative water source and proposed project are discussed in Chapter 7.

BCWWS Districts 1 and 2 appear to have enough treatment capacity and Biscayne groundwater allocations to the projected future water demands. BCWWS has been utilizing and assessing alternative water supply sources as well as continuing to focus on conservation efforts. BCWWS has identified the utilization of the Floridan Aquifer and the ASR system as alternative water sources, according to the 2019 update of the BCWWS WSFWP, along with the C-51 Reservoir, the Hillsboro ASR, and secondary canal integration using interconnects. Details for each alternative water source and proposed project are discussed in Chapter 7.

APPENDIX A

2020 BROWARD COUNTY 10-YEAR WATER SUPPLY FACILITIES WORK PLAN

INFORMATION CONTAINED WITHIN THE DOCUMENT PRESENTED IN THIS APPENDIX IS NOT AUTHORED BY THE CITY OF POMPANO BEACH. THEREFORE, COMMENTS PERTAINING INFORMATION CONTAINED IN IT CAN NOT BE ADDRESSED BY THE CITY.

THE DOCUMENT PRESENTED IN THIS APPENDIX WAS KNOWN TO BE THE LATEST WATER SUPPLY FACILITIES WORK PLAN DRAFTED, PUBLISHED, OR ADOPTED BY BROWARD COUNTY AS OF THE TIME OF SUBMISSION OF THE CITY OF POMPANO BEACH 2025 WATER SUPPLY FACILITIES WORK PLAN UPDATE.

BROWARD COUNTY
FLORIDA

Water Supply Facilities Work Plan

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LIST OF ACRONYMS

ASR	Aquifer Storage and Recovery
AWS	Alternative Water Supply
BCWWS	Broward County Water and Wastewater Services
BCPDMD	Broward County Planning and Development Management Division
BEBR	Bureau of Economic and Business Research
BMP	Best Management Practice
BMSD	Broward County Municipal Services Districts
CADA	Central Aquifer Drainage Assessment
CEPP	Central Everglades Planning Project
CERP	Comprehensive Everglades Restoration Plan
CIE	Capital Improvements Element
CUP	Consumptive Use Permit
DSS	Domestic Self Supply
EPA	Environmental Protection Agency
EPGMD	Environmental Protection and Growth Management Department
EPCRD	Environmental Planning and Community Resilience Division
FDEP	Florida Department of Environmental Protection
FPL	Florida Power and Light Corporation
F.S.	Florida Statutes
GOP	Goals, Objectives, and Policies
gpcd	Gallons Per Capita Per Day
IWRP	Integrated Water Resources Plan
LEC	Lower East Coast
LECWSP	Lower East Coast Water Supply Plan
LORS	Lake Okeechobee Regulation Schedule
LOS	Level of Service
LOSS	Level of Service Standard
LOSOM	Lake Okeechobee System Operating Manual
MFL	Minimum Flow and Minimum Water Level
MG	Million Gallons
MGD	Million Gallons Per Day
mg/L	Milligrams per Liter
MGM	Million Gallons Per Month
NADA	North Aquifer Drainage Assessment
NCA	National Climate Assessment
NIS	NatureScape Irrigation Services
PFAM	Population Forecast and Allocation Model
ppb	Parts per billion

RCAP	Regional Climate Action Plan
RO	Reverse Osmosis
SADA	South Aquifer Drainage Assessment
SAS	Surficial Aquifer System
SEFRCCC	Southeast Florida Regional Climate Change Compact
SFWMD	South Florida Water Management District
SRW	South Regional Wellfield
STA	Stormwater Treatment Area
SWR	Surface Water Routing
TAZ	Traffic Analysis Zones
TIP	Transportation Improvement Program
UAZ	Utility Analysis Zones
URO	Urban Runoff
USACE	U.S. Army Corps of Engineers
USGCRP	United States Global Change Research Program
USGS	United States Geological Survey
WCA	Water Conservation Areas
WPA	Water Preserve Areas
WRRDA	Water Resources Reform and Development Act
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

BROWARD COUNTY COMPREHENSIVE PLAN

Water Supply Facilities Work Plan

EXECUTIVE SUMMARY

This Broward County Water Supply Facilities Work Plan (2020 Work Plan) addresses traditional and alternative water supply (AWS) source development and management strategies to meet existing and projected water use demand. The 2020 Work Plan primarily focuses on Broward County's Public Works Water and Wastewater Services (BCWWS) service areas and unincorporated Broward County neighborhoods entitled the Broward County Municipal Services Districts (BMSD). It also contains updates about the implementation of the urban water resource management strategies, including water conservation programs, prioritized at the 2019 Broward Countywide Integrated Water Resources Plan (IWRP), coordinated by Broward County Environmental Planning and Community Resilience Division (EPCRD). Overall, approximately 240,000 people receive water and wastewater services in these areas and the population is expected to be 281,000 by 2040. The BMSD's water and wastewater services are provided by BCWWS and the City of Fort Lauderdale's utilities. BCWWS' southernmost service area receives potable water through connections with the City of Hollywood.

Florida Law (Section 163.3177(6)(c)3., Florida Statutes [F.S.]) requires local governments to adopt water supply facilities work plans into their comprehensive plans within eighteen months after the South Florida Water Management District (SFWMD) approves a regional water supply plan update. The SFWMD approved the 2018 Lower East Coast Water Supply Plan Update (LECWSP, SFWMD, 2018) on November 8, 2018, with final administrative order on January 11, 2019. The 2020 Work Plan is Broward County's required update based on that plan's adoption. In addition, Broward County integrated its comprehensive plan's water resources elements and the new version is included in the 2020 Work Plan.

Like most Southeast Florida water utilities, BCWWS' primary public water supply source water is the Surficial Aquifer System (SAS) located from ground surface to approximately 240 feet underground. BCWWS' groundwater withdrawal wells range between 75 to 130 feet below ground. Broward County's primary SAS feature is the Biscayne Aquifer and it provides the vast majority of BCWWS and BMSD populations' water supply needs.

However, the Biscayne Aquifer is considered a finite water resource by the SFWMD. In 2007, the SFWMD mandated through a Regional Water Availability Rule that AWS will be used to serve future population growth (SFWMD, 2007). For example, the brackish Upper Floridan Aquifer (approximately to 1000 – 1700 feet underground) can be withdrawn and treated with more complex processes than used for the Biscayne Aquifer water. Other AWS options include, but are not limited to, water conservation, water reuse, and surface water storage development. The 2020 Work Plan outlines future BCWWS AWS projects to serve future populations as well as projects that maintain and optimize BCWWS' current systems. Similar projects are covered for the City of Fort Lauderdale and the City of Hollywood.

The regional C-51 Reservoir project is the primary BCWWS AWS project to meet future population growth demands. Located in Central Palm Beach County, the C-51 Reservoir project is a public-private partnership to construct 60,000 acre-feet (equal to almost 20 billion gallons) of surface water storage. Captured stormwater from the C-51 watershed will be stored in the reservoir and moved across the region via canal systems to recharge local aquifers. BCWWS is planning to use up to six million gallons a day from the C-51 Reservoir project.

The Broward County and Palm Beach County water reuse partnership is another important regional AWS initiative. This beneficial reuse water project is BCWWS' strategy to comply with Florida's Ocean Outfall Law (Section 403.086(9), F.S). The project also provides beneficial water reuse supply to the Southern Palm Beach County region as well as portions of the North Springs Improvement District, Coconut Creek, Deerfield Beach, and Pompano Beach. BCWWS is currently increasing its water reuse production capacity to twenty-six million gallons a day from the current ten million gallons a day to implement this project.

Additional regional drivers for Broward County's water supply include regional climate impacts such as sea level rise, saltwater intrusion, and extreme weather events. Sea level rise threatens future South Florida water conveyance that could negatively impact aquifer recharge and flood control management practices. Due in large part to a porous aquifer, future sea level rise also will increase saltwater intrusion's negative effect on public water supplies. Saltwater intrusion from the ocean will likely move further inward and pose contamination risk for freshwater aquifers. Future extreme weather events may include longer dry weather patterns that could decrease public water supply levels and, may also increase saltwater intrusion's landward extent.

Broward County, together with its municipal and regional partners, supports and facilitates water supply and climate change planning integration and implementation including:

- The Broward County Climate Action Plan's water supply actions (Broward County, 2015) to maintain adequate water supply through conservation and adaptation, and integrated water resource management.
- The Southeast Florida Regional Climate Change Compact's (SEFRCCC) Southeast Florida Regional Climate Action Plan's (RCAP) critical water supply planning components (SEFRCCC, 2017).
- The goals of the Resilient Utility Coalition - an outgrowth from the Compact –to "operationalize resilience" in common water utility practices.

A major regional plan to restore Florida's Everglades – the Comprehensive Everglades Restoration Plan (CERP) – will also change future water resource conditions. CERP will construct additional water storage systems to capture wet season flow volumes and provide critical natural system water needs as well as maintain public water supply. CERP features within Broward County and in other SFWMD regions should collectively benefit local water supply sustainability throughout South Florida.

The 2019 IWRP Update provides key planning, assessment and coordination tools to optimally manage water resources. Its five main objectives are to:

- Make the most of local water resources, so that Broward's long-term water supply needs are met;
- Coordinate a diverse water management community, ensuring the efficient and effective management of Broward's water resources;
- Match up local water sources and users to ensure that water supplies are available when and where they're needed;
- Diversify water supplies so that the needs of urban and natural systems are met under wet and dry conditions; and,
- Promote water resource resiliency by evaluating future conditions, including potential climate impacts and adopt strategies, to mitigate, adapt, and prevent disruptions to our overall goal of more efficient and effective water management.

Additionally, the IWRP program developed, and continues to develop, several numerical hydrologic models used in decision making and to assist sustainable investments. Optimizing integrated secondary canal management is one hallmark success for the IWRP modeling. Broward County's Water Reuse Master Plan was developed to facilitate more projects Countywide and its implementation is greatly assisted with the IWRP's AWS grant investments.

Water conservation remains a critical AWS strategy in the 2020 Work Plan. In 2010, the Broward County Board of County Commissioners passed an irrigation ordinance adopting year-round irrigation restrictions limiting landscape watering to two days per week. In addition, Broward

County implements a broad set of water conservation programs that are designed to produce long-term demand reductions along with water quality improvements. These programs, targeted at various user groups, including Broward Water Partnership Conservation Pays, NatureScape Irrigation Services (NIS), NatureScape Broward, Know the Flow, Water Matters Day, and the NatureScape Broward School Board Environmental Partnership Agreement. The current IWRP goal of Broward County's water conservation programs combined is 10 gallons per day per capita reduction in water use Countywide by 2028.

Finally, the 2020 Work Plan data analysis demonstrates BCWWS will continue to meet its "Retail Potable Water Level of Service Standards". Special recommendations and a ten-year work plan outline the major C-51 Reservoir Project (27.6 million dollars) and Palm Beach County Reuse Partnership (104 million dollars) investments and components. In addition, water treatment plant (WTP) upgrades and water conservation projects are described. BCWWS' robust 5-year Capital Improvement Program is scheduled to spend over 123 million dollars on over sixty components to maintain and optimize the current system as well as build new features. All the 2020 Work Plan projects contribute towards BCWWS successfully managing future challenges to provide excellent water and wastewater services for its service areas.

INTRODUCTION

Broward County is located on the Southeastern coast of Florida and is adjacent to the Atlantic Ocean to the east, Miami-Dade County to the south, Collier County to the west and Palm Beach County to the north as shown in Figure WS1 below. This Broward County Water Supply Facilities Work Plan Update (2020 Work Plan) identifies water supply sources, availability 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 South Florida Water Management District (SFWMD) approves a regional water supply plan update. The 2018 Lower East Coast Water Supply Plan (LECWSP) Update was adopted by the SFWMD's Governing Board on November 8, 2018. Therefore, local governments within the Lower East Coast (LEC) region are required to amend their comprehensive plans and include an updated Water Supply Facilities Work Plan and related planning elements by May 8, 2020.

BCWWS produces potable water for its northern and central service areas. BCWWS' southernmost service area receives potable water through connections, with the City of Hollywood. BMSD areas receive water and wastewater services from BCWWS and the city of Fort Lauderdale's utilities. BCWWS and both cities are responsible for ensuring enough capacity is available for existing and future customers.

This 2020 Work Plan will reference the initiatives already identified to ensure adequate water supply for BCWWS and BMSD. According to state guidelines, the work plan and comprehensive plan must address the development of traditional and alternative water supplies, service delivery and conservation and reuse programs necessary to serve existing and new development for at least a 10-year planning period. The work plan will have a planning time schedule consistent with the comprehensive plan and the 2018 LECWSP update. The Broward County 2020 Work Plan is divided into seven sections:

Section 1 – Introduction
Section 2 – Regional Issues
Section 3 – Broward County
Section 4 – Data and Analysis
Section 5 – Special Recommendations and Actions
Section 6 – BCWWS Capital Improvements
Section 7 – Goals, Objectives and Policies

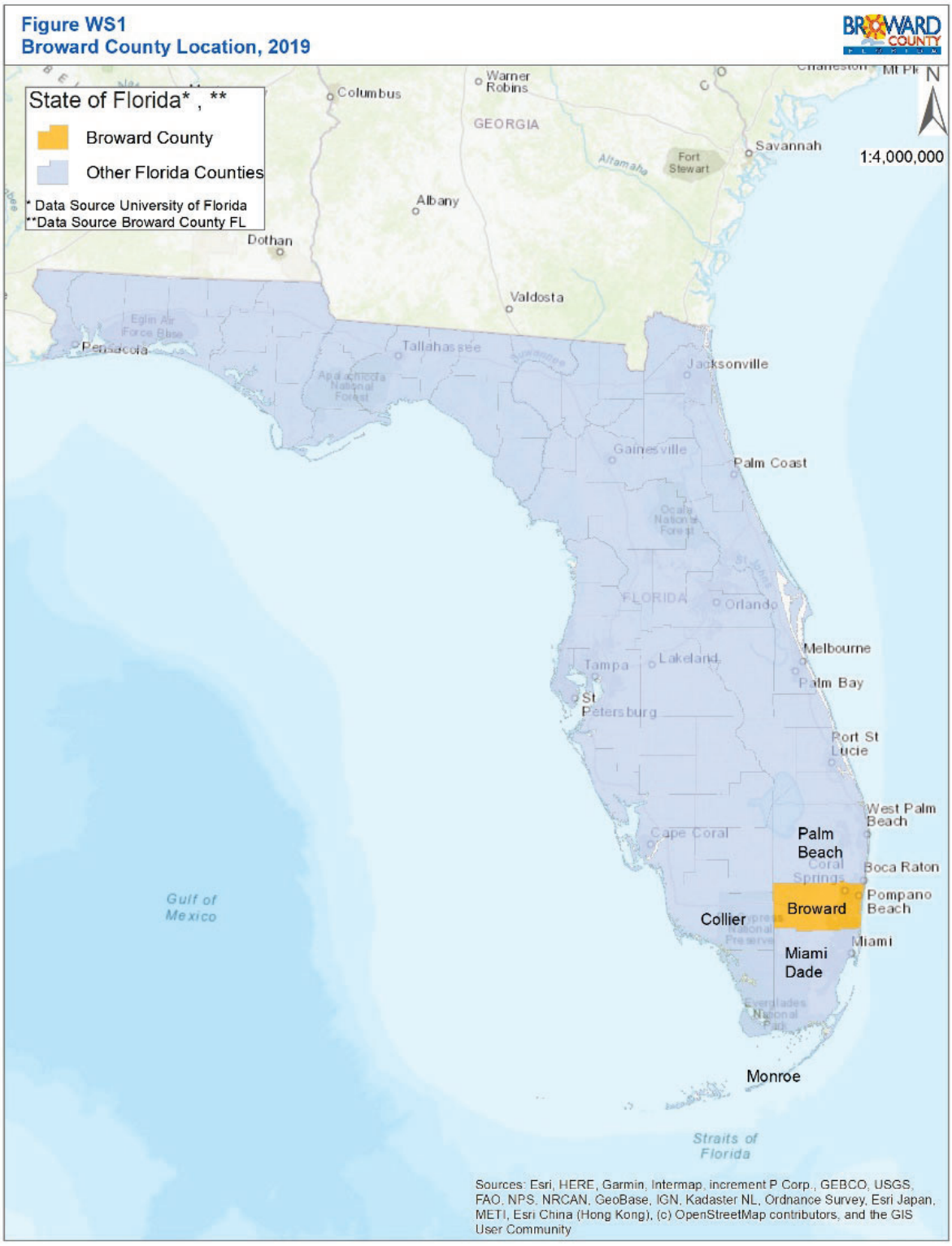

Figure WS1 Broward County Location

A. Statutory History

The Florida Legislature enacted bills in the 2002, 2004, 2005, 2011, 2012, 2015 and 2016 sessions to address the state's water supply needs. Two of these bills, Senate Bills 360 and 444 (2005 legislative session), significantly changed Chapters 163 and 373, 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 local land use and water supply planning.

B. Statutory Requirements

Broward County has considered the following statutory provision in updates to this 2020 Work Plan.

1. Coordinate appropriate aspects of its comprehensive plan with the LECWSP [Section 163.3177(4)(a), F.S.].
2. Ensure the future land use plan is based upon availability of adequate water supplies and public facilities and services [Section 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 for review.
3. Ensure that adequate water supplies and potable water facilities are available to serve new development no later than the issuance by the local government of a certificate of occupancy or its functional equivalent and consult with the applicable water supplier to determine whether adequate water supplies will be available to serve the development by the anticipated issuance date of the certificate of occupancy [Section 163.3180(2), F.S.].
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 AWS project(s) selected by the local government from projects identified in the LECWSP, or alternative projects(s) proposed by the local government under Section 373.709(8)(b), F.S. [Section 163.3177(6)(c), F.S.];
    b. Identify the traditional and AWS projects and the conservation and reuse programs necessary to meet water needs identified in the LECWSP [Section 163.3177 (6) (c) 3, F.S.]; and

c. Update the 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 [Section 163.3177(6)(c) 3, F.S.].

5. Revise the Five-Year Schedule of Capital Improvements to include water supply, reuse, and conservation projects and programs to be implemented during the five-year period [Section 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 LECWSP, as well as applicable consumptive use permit(s) [Section 163.3177(6)(d), F.S.]. The plan must address the water supply sources necessary to meet and achieve the existing and projected water use demand for the established planning period, considering the applicable regional water supply plan [Section 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 the LECWSP [Section 163.3177(6)(h) 1, F.S.].
8. While an Evaluation and Appraisal Report is not required, local governments are encouraged to comprehensively evaluate and, as necessary, update comprehensive plans to reflect changes in local conditions. The evaluation could address the extent to which the local government has implemented the need to update its work plan, including the development of alternative water supplies, and determine whether the identified AWS projects, traditional water supply projects and conservation and reuse programs are meeting local water use demands [Section 163.3191(3), F.S.].

REGIONAL ISSUES

The regional issues impacting Broward County include:

1. Climate Impacts and Future Water Supply Conditions: Climate impacts and future water supply conditions need to be integrated into water resources resilience planning efforts;
2. Water Use Limitation: Limitation of fresh surface water and groundwater use by the SFWMD's Regional Water Availability Rule and Everglades and Lake Okeechobee Minimum Flow and Minimum Water Levels (MFL);
3. Alternative Water Supply: The need to develop diverse water sources to meet current and future water needs, including C-51 Reservoir Project, Floridan Aquifer, and reuse as mandated by the Ocean Outfall law; and,
4. CERP Implementation: Construction of additional storage systems (e.g. CERP's reservoirs, aquifer storage, and recovery systems) to capture wet season flow volumes will be necessary to increase water availability during dry conditions and attenuate damaging peak flow events from Lake Okeechobee.

A. Climate Impacts and Future Water Supply Conditions

Investigations and evaluations conducted at the national, regional, and local levels have reinforced the need to plan for the predicted impacts of different rainfall patterns and more frequent and severe drought, increases in tidal and storm-related flooding, and the loss of coastal wellfield capacity due to saltwater contamination. In the absence of proactive planning, these impacts will present liabilities for coastal and inland communities with implications for urban water supplies, water and wastewater infrastructure, and both regional and local drainage/flood control systems.

Broward County, together with its municipal and regional partners, understands that it is imperative that local governments and water utilities begin to formalize the integration of water supply and climate change considerations as part of their coordinated planning efforts. Water resource resilience can be achieved with relevant updates to Water Supply Facilities Work Plans and focused, actionable enhancements to comprehensive planning Goals, Objectives, and Policies (GOP). Key considerations for communities within the Southeast Florida planning areas include: 1) sea level rise, 2) saltwater intrusion, 3) extreme weather, and 4) infrastructure investments to support diversification and sustainability of water supply sources, and adaptive stormwater and wastewater systems.

The 2019 IWRP Report states that it is necessary to understand future conditions, particularly as related to potential climate impacts including extreme droughts and rainfall events, along

with sea level rise and related saltwater intrusion, in order to ensure that Broward's water resources will be sustainable and promote more effective and efficient water resources management. The Broward County water management community works with many groups, including the state and federal government, academia, and the private sector to study the impacts that a changing climate brings and to develop plans for mitigation and adaptation.

Among 2019 IWRP objectives, there is: "to promote water resources resiliency by evaluating future conditions, including potential climate impacts and adopt strategies to mitigate, adapt, and prevent disruptions to Broward's overall goal of more efficient and effective water management."

In addition, the Water Supply Actions within the Broward County Climate Action Plan (2015) are intended to maintain adequate water supply through conservation and adaptation, development of decision support tools necessary to build community resilience and increase the resilience of natural systems through integrated water resource management. The 11 actions that are proposed include:

- Continue local water conservation programs
- Include climate change in updates of LECWSP
- Investigate regionalization of water supply
- Monitor and protect wellfields
- Develop AWS strategies
- Model the sustainable use of the aquifer
- Evaluate impacts of flooding of contaminated sites
- Evaluate reuse water interaction with and impacts to the natural systems
- Implement reuse strategies
- Evaluate reuse considering sea level rise
- Increase percentage of pervious areas

Both the 2019 IWRP Update and Broward's Climate Action Plan support the work of the Southeast Florida Regional Climate Change Compact (SEFRCCC) to develop the Regional Climate Action Plan (RCAP) (SEFRCCC 2017), which is the four-County Southeast Florida Regional Climate Compact's guiding tool for coordinated climate action in Southeast Florida. Broward County has taken a lead role as a compact partner in organizing the water section of the Water Goal of the document, which is designed to "advance the water management strategies and infrastructure improvements needed, in parallel with existing water conservation efforts, to mitigate the potential adverse impacts of climate change and sea level rise on water supplies, water and wastewater infrastructure, and water management systems, inclusive of regional canal networks, pumps, control structures, and

operations." Twenty-one actions are included within this goal. Compact documents produced to assist policymakers, administrators, and program staff include "Integrating Climate Change and Water Supply Planning in Southeast Florida" and "Regional Impacts of Climate Change and Issues for Stormwater Management" (SEFRCCC, 2019).

Sea Level Rise

Sea level rise has significant implications for water management and water supply planning in Southeast Florida, the rate of which is accelerating. During the previous century, the global rate of sea level rise averaged approximately 1.6 mm per year. The rate of rise increased to an average of 1.7 mm per year during the second half of the last century, followed by a more significant increase to 3.3 mm per year measured during the last decade. This trend of rising sea level is reinforced by local tide data which documents an increase in regional sea level of about 9 inches during the last 100 years. While there continues to be uncertainty about the overall extent of sea level rise that might be realized in the coming century, the Fourth National Climate Assessment (NCA, USGCRP, 2018) report presents a probable range of 1 to 6 feet by 2100. In Southeast Florida, partner counties in the Southeast Florida Regional Climate Change Compact, inclusive of Broward, Palm Beach, Miami-Dade, and Monroe counties, have collectively agreed to use modified guidance developed by the U.S. Army Corps of Engineers (USACE) and a planning scenario of 9 to 24 inches additional sea level rise by 2060, consistent with projections presented in the 2014 NCA, Figure WS2 below. This unified sea level rise projection has been formally adopted by Palm Beach, Broward, Miami-Dade and Monroe Counties and is now being used to inform planning processes and project design throughout the region. As the impacts of historic sea level rise are already being realized and acceleration of the rate of rise is expected to compound local impacts and vulnerabilities, it is prudent that planning processes begin to formally reflect consideration of sea level rise as a future condition with recognized implications for near-term and longer-term planning decisions.

Sea level rise produces varied challenges with the respect to water resources sustainability, water management, and water/wastewater facilities and infrastructure. Impacts include saltwater contamination of coastal wellfields, infiltration of groundwater with chloride levels into wastewater collection systems, impairing normal operations and maintenance, as well as opportunities for beneficial use of reclaimed water as an AWS. Water management systems are also at risk with systems constrained by rising groundwater and tail water elevations which reduce soil storage and discharge capacity, with increased potential for both inland and coastal flooding and less opportunity for long-term storage of stormwater for beneficial reuse.

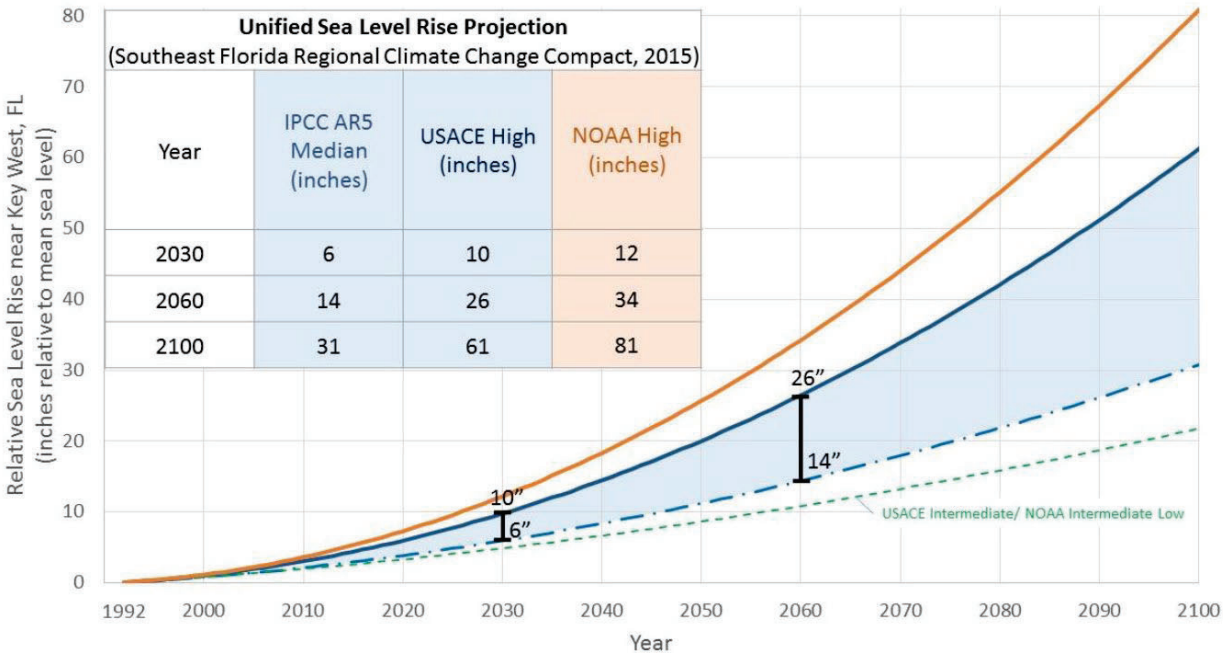

Figure WS2 Southeast Florida Regional Climate Change Compact Unified Sea Level Rise Projection[1]

These realities necessitate consideration of plans and investments that may be needed to compensate for loss of existing water supplies through relocation of wellfields and the development of AWS sources, while also seeking opportunities to expand regional water storage opportunities. These investments and considerations are in addition to concurrency planning for population growth and water demands that are typical requirements for water supply planning.

Saltwater Intrusion

Along the coast of Southeast Florida, and several miles inland, groundwater supplies and potable wells are vulnerable to saltwater contamination. The Biscayne Aquifer, which serves as the regional's primary water supply, is a shallow, surficial aquifer characterized by limestone karst geology, which is highly porous and transmissive. As a result, coastal saltwater intrusion of the aquifer has begun to restrict coastal water supplies and necessitated the development of western wellfields, changes in wellfield in water management operations, and investments in reclaimed water projects to enhance aquifer recharge. At the toe of the saltwater front, chloride concentrations exceed drinking water

[1] The unified sea level rise projection is updated every 5 years, having its next one anticipated to be released at the Southeast Florida Regional Climate Change Compact Summit, in December 2019. Link to current 2015 version shown above: https://southeastfloridaclimatecompact.org/wp-content/uploads/2015/10/2015-Compact-Unified-Sea-Level-Rise-Projection.pdf

standards of 250 milligrams per liter (mg/L) and thus restrict and/or require abandonment of wellheads located east of the saltwater intrusion line.

While impacts and planning efforts have historically focused on the most at risk utilities and wellfield, the accelerated rate of sea level rise and advancements in modeling and planning tools provide support and justification for a more holistic review of anticipated trends and necessary responses on both a local and regional scale.

As early as the 2000 LECWSP, these impacted water supply entities were classified as:

- Utilities at Risk – Utilities with wellfields near the saltwater interface that do not have an inland wellfield, have not developed adequate alternative sources of water, and have limited ability to meet user needs through interconnects with other utilities; and
- Utilities of Concern – Utilities having wellfields near the saltwater interface, the ability to shift pumpages to an inland wellfield, or an alternative source that is not impacted by the drought.

Technical assessments have further identified changes in land use, drainage of the Everglades, wellfield operations, and sea level rise as contributing factors to the historical movement and current location of the saltwater front within the productive layer of the aquifer.

Hydrologic modeling has revealed that sea level rise, when combined with coastal wellfield pumping, has accelerated the movement of the front, doubling the rate at which the front has progressed during the last several decades at certain locations. It is expected that sea level rise will constitute an increasingly significant influence on the rate of saltwater migration during the decades to come and that critical wellfield capacity will be lost with an additional 2-foot increase in sea level, the extent of which will vary along the coast. Conditions will be further influenced by temporal hydrologic conditions and responses in water management operations. It is therefore prudent for water utilities throughout the region (both inland and coastal) to consider adaptation plans that might include wellfield relocation or expansion of western wellfields as part of planned efforts to meet shared regional water demands. Continuation of groundwater monitoring and modeling efforts will be critical to predicting the movement of the front under sea level rise scenarios anticipated over the next several decades and adaptation efforts should continue to be refined in accordance with predicted and realized trends. Regional and local data will be important in informing decision-making.

In 2006, Broward County's EPCRD contracted with the United States Geological Survey (USGS) to develop a numerical model to evaluate various influencing factors on the

saltwater movement within the Biscayne Aquifer in the northern third of the County. This tool was proven to be effective in representing historic and future conditions and was demonstrated to have utility as a planning tool for future water resources projects and development of resilience strategies. This modeling effort was subsequently expanded to the central and southern portions of the County to simulate historic saltwater intrusion and to test the extent to which wellfield pumpage, surface water management, and sea level rise contribute to and influence the movement of saltwater and how the aquifer can be expected to respond to future climate conditions. The tool will also investigate the implications on the viability of water supplies and be used to identify and test possible adaptive strategies. This model was published and publicly released in March 2016.

The County is also enhancing this investment with concurrent development of a Climate Vulnerability/Inundation model focused on coupled hydrologic impacts of saltwater intrusion, surface water/groundwater elevations, and stormwater inundation. This model, also developed in cooperation with USGS, builds upon the County's Variable Density Model to assess the influence of changing climatic conditions on urban water resources and infrastructure. The current initial effort integrates bias-corrected, dynamically downscaled data from Global Circulation models into the updated surface/groundwater model that will be used for predictions Countywide. Refinements such as Surface Water Routing (SWR) and Urban Runoff (URO) components offer more detailed conceptualization of the surface water/groundwater interactions that can be then used to assess the predictive scenarios and comparison of alternative water resource strategies in a smaller study area of the County. This model was published and publicly released in February 2019. Initial results of the implementation of the SWR and URO packages in the study area were successful and, as such, expansion of the two packages throughout the entire urban extents of the County are currently underway.

In the recent restudy of Flood Insurance Rate Maps completed in 2014 by FEMA, the County's MIKE SHE/MIKE 11 model was utilized and updated. The County is updating this map to anticipate 100-year flood elevations that are expected to occur by 2060-2070, accounting for sea level rise and more intense rainstorms. The effort includes data collection of recent or previously not included drainage infrastructure, refined model grid and associated LiDAR, land use updates, roughness coefficient improvements, addition of detention storage and ponded drainage routines, and incorporation of future tide levels. It is anticipated the Future Conditions 100-Year Flood Elevation Map will be completed in Fall of 2019, when approval process will be initiated.

The mapping of the current saltwater intrusion front is elaborated based on the end of dry season data available at 93 monitoring stations supported by local governments

throughout the region, the USGS, and the SFWMD. The current Saltwater Intrusion Line for Broward County, Figure WS3 was last updated in 2014 and the SFWMD is currently working to advance, with an anticipated publishing date of December 2019.

Extreme Weather Events

As extreme events increase in frequency and severity, comprehensive planning should consider impacts and risks associated with drought, water shortages and reduced groundwater tables, all of which can hasten saltwater intrusion and exacerbate water supply impacts. Conversely, more intense rainfall will cause flooding, increased runoff, impacts to the natural systems and provide less recharge potential for wellfields. Integrated water resource management strategies will help to mitigate for these impacts, particularly those projects that can serve to provide additional long-term storage of stormwater runoff and redistribution of excess rainfall during dry periods and drought. Regional surface water reservoirs and below ground aquifer storage and recovery (ASR) systems are potentially viable AWS projects and climate adaptation strategies.

Infrastructure Development

With increasing climate disruptions, there is a need to diversify water supply sources, improve treatment technologies and to support the development of adaptive stormwater and wastewater infrastructure design criteria to ensure long-term sustainability of key facilities. Conversely, alternative water treatment technologies generally have a high energy demand and carbon footprint that can exacerbate climate change impacts. Strategic infrastructure planning should incorporate these constraints and work within with the GOP of the Comprehensive Planning process and Water Supply Facilities Work Plans to provide for long-term sustainability and a balanced approach to future development.

Increases in groundwater deviations, as both direct and indirect response to sea level, will challenge the function of drainage systems and is expected to exacerbate flooding, for even mild storm events. Conditions will be more severe with extreme rainfall events increasing damage to low-lying utility infrastructure and contribution to prolonged surface water flooding. Planning for the combined influences of storm events, high tides and sea level rise on drainage system functions and other public infrastructure is a critical need as is the assessment of viable water supplies and impacts to the natural systems from prolonged droughts.

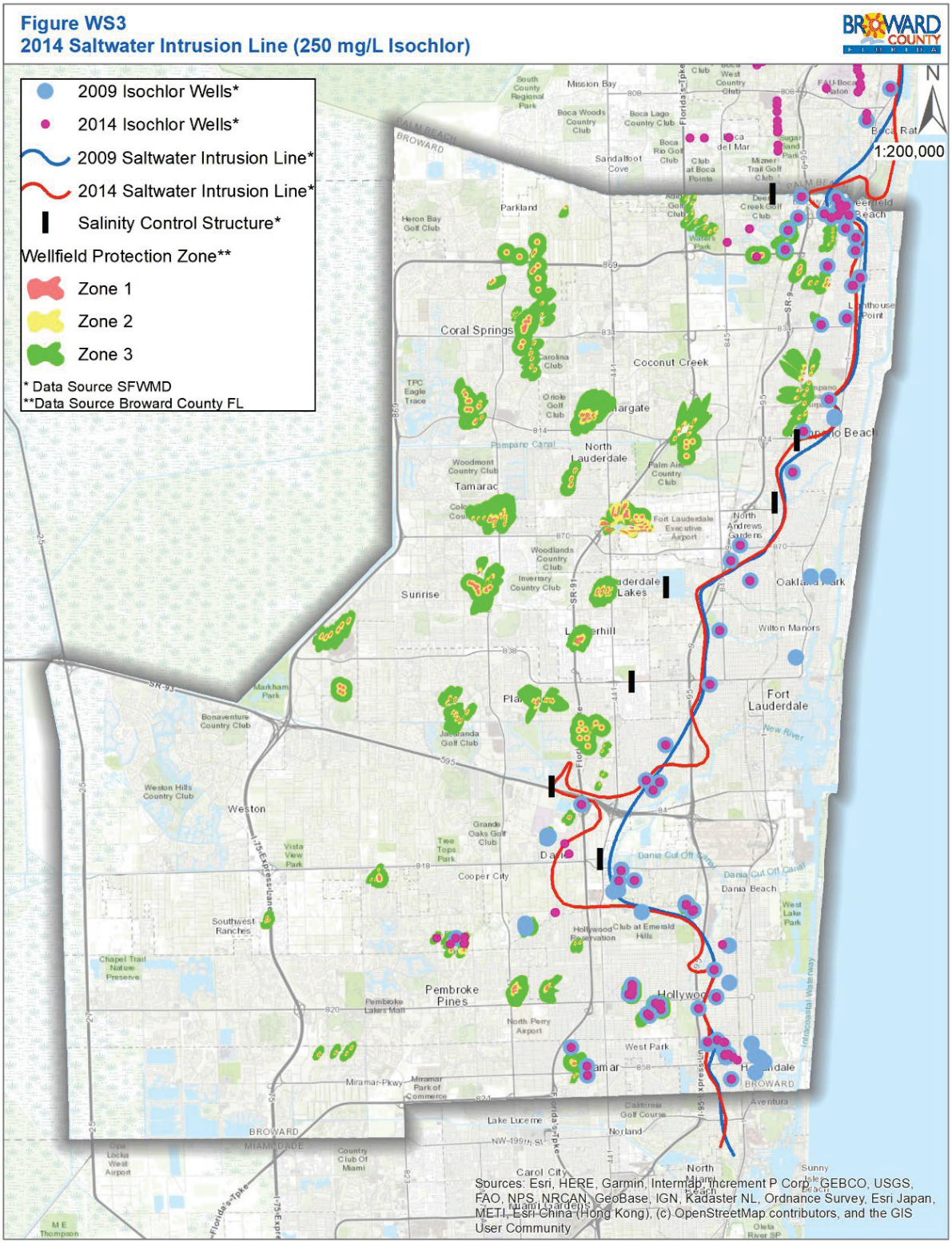

Figure WS3 Saltwater Intrusion Line (2014 SFWMD Isochlor Line – 250mg/L) for Broward County

Options that provide for a diversification of water projects and protection of resources will be fundamental and may include: regional water storage such as the C-51 Reservoir Project; ASR; the development and use of highly treated wastewater (reverse osmosis - RO) for recharge as hydrodynamic barriers; the relocation and/or regionalization of wellfields and treatment facilities away from low-lying areas; and enhancing operational flexibility.

B. Water Use Limitation

The MFLs outlined in the Florida State Statutes are defined as the "limit at which further withdrawals would be significantly harmful to the water resources or ecology of the area" (Section 373.042(1), F.S.). They serve to protect the SAS from saltwater intrusion, ensure adequate groundwater levels for maintenance of natural systems, and prevent excessive groundwater seepage or surface water flows from the regional (Everglades) system.

As part of the establishment of MFLs, the regional water management district must determine whether the existing flow or level in the water body is below or projected to fall below the MFL criteria within the next 20 years. If so, then the district must develop a recovery or prevention strategy and, when appropriate, include development of additional water supplies, water conservation, and other efficiency measures consistent with the provisions in Sections 373.0421 and 373.709, F.S., and provide the information and timelines for these strategies within the regional water supply plans. The 2005-2006 LECWSP Update (2005-2006, LECWSP) included MFLs for the Everglades and Biscayne aquifer identifying key water resource development projects in the CERP as recovery and prevention strategies to meet MFL criteria.

In 2001, an MFL was adopted for the Biscayne Aquifer, which exists beneath south eastern Florida. The MFL was based on the relationship between Everglades surface water and groundwater levels and their ability to inhibit the movement of saline water inland from the Atlantic Ocean. The primary MFL study (SFWMD 2000c) concluded that groundwater levels in the Biscayne were not endangered by present nor future year 2020 conditions. However, since the Biscayne aquifer and Everglades are supported by surface water from the Regional System and, since Everglades MFL is under recovery strategies, it was determined that any projected increase in allocations from the Biscayne would cause the Everglades MFL to be unobtainable. Additionally, the regional system was designated by the SFWMD in 2003 as a source of limited availability, leading to the limitation of consumptive use allocations in both the Everglades and Loxahatchee River Watersheds in 2006 under the Regional Water Availability Rule. The Regional Water Availability Rule is codified in the Applicant's Handbook for Water Supply Permitting within the South Florida Water Management District (SFWMD, 2015) in Section 3.2.1.E.3. Due to the limitation of

groundwater from the Biscayne aquifer in order to maintain MFL, Broward County is required to meet additional demands with alternative water supplies.

After the approval of the 2005-2006 LECWSP, continued concern over the safety of Lake Okeechobee's dike and ecological impacts warranted that the USACE set a new regulation schedule for lake water releases. The Lake had historically provided water supplies directly to a few rural utilities, irrigation water for the Everglades agricultural area, and backup water source for urban users in the coastal basins during droughts and dry times as 'pass through' water to the Water Conservation Areas (WCAs). With the 2008 Lake Okeechobee Regulation Schedule and lower stage levels, an average loss of approximately 430,000 acre-feet of storage diminished the level of certainty for existing legal users (SFWMD, 2013). This mandated that a prevention and recovery strategy be implemented with water resources strategies identified to meet the MFL criteria, as was done for the Everglades and Biscayne MFL. Therefore, in August 2008 the 2005-2006 LECWSP, Appendix J was amended to include a recovery strategy for the Lake Okeechobee MFL and, as with the other MFLs, the Lake MFL recovery strategy relies upon key CERP projects to be completed in addition to the completion of the Herbert Hoover Dike repairs.

In 2019, USACE initiated the development of the new Lake Okeechobee System Operating Manual (LOSOM) with the purpose to reevaluate and define operations for the Lake Okeechobee regulation schedule that to account for additional infrastructure that will soon be operational. The additional infrastructure that are being taken into consideration include the Herbert Hoover Dike rehabilitation, Kissimmee River Restoration Project, as well as the CERP C-43 West Basin Storage Reservoir and C-44 Reservoir and Stormwater Treatment Area.

The SAS in the Southeastern Florida peninsula, which includes the Biscayne Aquifer, is one of the most productive aquifers in the world and is currently the primary source of freshwater to residents of Broward County, Miami-Dade County, and Southeastern Palm Beach County. In 1979, it was designated a sole source aquifer by U.S. Environmental Protection Agency (EPA), under the Safe Drinking Water Act (1974). The SFWMD is the state agency responsible for water supply planning in the LEC planning area, which includes all of Broward County.

Withdrawals from the SAS are managed by the SFWMD through the issuance of Consumptive Use Permits (CUPs). In order to secure and maintain a CUP, applicants, consisting of water utilities, developers, agricultural operations, and water control districts, must meet the permitting criteria of: 1) being a reasonable and beneficial use of the resource; 2) demonstration of no adverse impact to other existing legal uses of water; and 3) assurance

that the use of the requested quantity of water is necessary for economic and efficient use and is both reasonable and consistent with the public interest.

These uses must include compliance with the MFLs established for surface water and groundwater sources, Chapter 373, F.S. In the implementation of prevention strategy for the Everglades, Lake Okeechobee and Biscayne aquifer MFLs, the Governing Board of the SFWMD adopted Restricted Allocation Areas in 2007 and 2008. For the LEC planning region, this mandated that new water demands requiring recharge from the Everglades regional system be met through the development of AWS. The numerous (115) AWS projects that were recommended as part of the 2005-2006 LECWSP Update were driven largely by these Restricted Allocation Areas and the concurrent consumptive use restriction for future water supply withdrawals from the surficial aquifer to historic levels (prior to April 1, 2006).

Opportunities for assistance for these AWS projects occurred in 2005 with the passage of Senate Bill 444, creating a funding and incentives program to encourage the development of alternative water projects as defined in Section 373.019, F.S. The projects were defined as from the following sources: saltwater; brackish water; surface water captured during wet-weather flows; sources made available through the addition of new storage capacity for surface or groundwater; water that has been reclaimed after one or more public water supply, municipal, industrial, commercial, or agricultural uses; the downstream augmentation of water bodies with reclaimed water; stormwater; and any other water supply source that is designated as nontraditional for a water supply region in the applicable water supply plan.

This program funding has since been severely limited within the LEC region and has directly impacted the ability of local water supply entities to advance the development of AWS projects through their own individual efforts.

C. Alternative Water Supply

Reclaimed Water

In 2008, the Florida Legislature enacted an ocean outfall statute (Section 403.086(9), F.S.). This requires the elimination of the use of six ocean outfalls in Southeastern Florida as the primary means for disposal of treated domestic wastewater, two of which are in Broward County, one of which is operated by Broward County Water and Wastewater Services. The affected wastewater utilities must reuse at least 60 percent of the historic outfall flows by 2025. The objectives of this statute are to reduce nutrient loadings to the environment and to achieve the more efficient use of water for water supply needs. South Florida utilities are working to advance reuse projects to meet the requirements.

Upper Floridan Aquifer

On occasions when local utilities seek use of the Floridan Aquifer to supplement their Biscayne Aquifer-sourced water, they are faced with higher energy costs associated with treatment of the Floridan Aquifer water in South Florida, which has elevated chloride concentrations above those that are found elsewhere in Northern and Central Florida. Typically, the utilities in Broward County that utilize the Floridan Aquifer mix that water with Biscayne water supplies, thereby diluting the chlorides and subsequently providing a finished water requiring less treatment than water that is derived solely from the Floridan Aquifer.

C-51 Reservoir Project

The C-51 Reservoir project is a public-private partnership for the construction of 60,000 acre-feet of storage for use as an AWS source in Southeastern Florida. Diversion and improved management of freshwater flows was formally identified as a priority restoration strategy for the Lake Worth Lagoon dating to the 1992 Restudy of the C & SF Flood Control Project. Coordination between Broward and Palm Beach water utilities and Counties was initiated in 2006. The C-51 Reservoir Project is presented at the 2018 LECWSP as an AWS source to meet with regional projected 2040 water demands. Beyond water supply, the reservoir will contribute to capture excess flows and enhance stormwater management, reduce harmful discharges and associated nutrient loads to Lake Worth Lagoon. It should also mitigate saltwater intrusion by maintaining higher canal stages and recharging coastal wellfields along the LEC. These potential environmental enhancements are being studied as part of the Phase 2 feasibility analysis currently underway.

D. COMPREHENSIVE EVERGLADES RESTORATION PLAN Implementation

The CERP is the blueprint for refitting the region's outdated water management infrastructure. By addressing the needs of the natural system with those of the urban areas and agriculture, the plan provides considerable benefits throughout the system and is a first step towards a sustainable South Florida. The CERP is designed to capture, store, or convey water now discharged to tide, making it available for all users and yielding benefits for both the regional system and local partners. The USACE and the SFWMD are partners in the re-plumbing of the Everglades with the objective of "getting the water right". This watershed plan is linked to the SFWMD's LECWSP, which addresses water supply issues in Miami-Dade, Broward, and Palm Beach Counties over the next twenty years.

In October 2011, the South Florida Ecosystem Restoration Task Force endorsed a state-federal initiative to speed up planning for key restoration projects in the heart of the Everglades. The Central Everglades Planning Project (CEPP) incorporates updated science

and technical information gained over the last decade to allow more water to be directed south to the central Everglades, Everglades National Park, and Florida Bay while protecting coastal estuaries. The USACE led the CEPP planning effort in partnership with the SFWMD.

The Broward County Water Preserve Areas (WPA) project, part of CERP, was authorized by Congress as part of the 2014 Water Resources Reform and Development Act (WRRDA). The two primary functions of the project is to reduce seepage losses from the WCA 3A/3B to the C-11 and C-9 basins and to capture, store, and distribute surface water runoff from the western C-11 basin that has discharged into the WCA 3A/3B. Indirectly this will help to buffer the local water system against drought. The stormwater that was previously discharged via the S-9 pump station westward to the WCA will now be stored in the C-11 impoundment and slowly released into the canal system to be discharged via the S-9A structure eastward. Maintaining those canals at the control elevation will help maintain recharge to the aquifer and wellfields such as the Broward County South Regional in the area.

BROWARD COUNTY

This section identifies the future water supply needs of those areas serviced by either BCWWS or other BMSD water suppliers to ensure that water supply allocations and projects will be enough to meet projected demands. The role of the EPCRD and BCWWS are to identify the future water supply needs and available supplies of the BCWWS service area (see Data and Analysis Section) as well as for those served within the BMSD. Currently, water service is provided by BCWWS to the BMSD areas of Broadview Park and Hillsboro Pines. The City of Fort Lauderdale utility serves the BMSD areas of Washington Park, Franklin Park, Boulevard Gardens, and Roosevelt Gardens. In coordination with the Fort Lauderdale's Planning and Zoning Department and Water utilities, the EPCRD has identified current and future water supply needs and water supplies as detailed below.

A. Broward County Settings

Broward County (County) is located along the lower east coast of Florida, between Miami-Dade County to the south, Palm Beach County to the north, and Collier and Hendry Counties to the west. The County was formed from parts of Palm Beach and Dade Counties in 1915. At that time, the population was 4,763 (Florida State Census). In 2010, the Census estimated the population of the County to be 1,748,066 making it the second most populated county in the State after Miami-Dade (2010 Census Data). The University of Florida's Bureau of Economic and Business Research (BEBR), 2018 estimate lists the County's population at 1,873,970.

In land size, the County contains more than 1,225 square miles, however, only the eastern third of the County (approximately 422 square miles) is urbanized. The remaining two-thirds of the County is composed of wetlands that constitute a large part of the Everglades WCAs. This portion of the County is actively undergoing the planning and construction related to restoration of the Everglades, the largest natural system restoration effort in the world. With a population of nearly 1.8 million living on approximately 422 square miles of relatively low-lying developable urban land, the population density of the County is approximately 4,200 people per square mile.

Balancing Everglades restoration efforts and climate change impacts with our growing communities presents the County with significant water resource planning challenges. However, Broward has long recognized that water is a shared regional resource and that effective and efficient water management requires Countywide and regional coordination. To this end, the County is a founding member of the Southeast Florida Regional Climate

Change Compact and board member of the Resilient Utility Coalition to ensure sustainability of the water resources in our region.

Southeast Florida is widely considered one of the most vulnerable regions with respect to the impacts of climate change and sea level rise. This is largely the result of several unique geographic characteristics, which include low land elevations, flat topography, a porous geology, and dense coastal development. In combination, climate change and sea level rise are expected to present significant challenges relating to water resource planning, management, and infrastructure for communities throughout the region, which includes Palm Beach, Broward, Miami-Dade, and Monroe Counties. These communities have agreed to partner in regionally-coordinated climate mitigation and adaptation strategies as part of the Southeast Florida Regional Climate Change Compact (SEFRCCC) and have jointly developed and adopted a Regional Climate Action Plan (RCAP 2.0), including 142 recommendations in twelve primary focal areas, with 21 specific to the focal area of "Water", Table WS1 below. These recommendations are intended to meet the goals of advancing water management strategies and infrastructure improvements needed to mitigate for adverse impacts of climate change and sea level rise on water supplies. Recommendations are incorporated throughout this 2020 Work Plan and related comprehensive planning element updates.

Table WS1 Water Supply Recommendations from the Regional Climate Action Plan 2.0 [1]

[1]WS-1	Develop and share new water management information, methods, technical capabilities, and trends addressing key climate variability and sea level rise concerns through the Compact's collaborations with state and federal agency partners and academic institutions, as well as through the RCAP. Establish a method for a periodic exchange of ideas between water resource managers, policymakers, stakeholders, scientists, and researchers in collaboration with the Compact, the South Florida Water Management District, and local academic partners.
WS-2	Ensure all water resource policy, planning, and management decisions in the Lower East Coast Water Supply Planning Area are consistently aligned with: a) the latest Southeast Florida unified sea level rise projections; b) regional climate scenarios for planning (e.g., storm surge, design storm events); and, c) hydrologic models used in adaptation planning, from local to regional scales. Ensure all water resource policies consider regional water management issues, including flooding and water variability. For flooding, use impact assessments for observed and predicted climate variability on the frequency, duration, and intensity of flooding connected to sea level rise, extreme tidal excursions, storm surges, and 100-year rainfall events. Use impact assessments to determine where impacts will likely be greatest. For water availability, examine the effects of climate change and sea level rise on water availability and groundwater vulnerability to saltwater intrusion, based on potential changes in precipitation and evapotranspiration patterns and associated extreme drought and flood events.
WS-3	Encourage the South Florida Water Management District to integrate potential future climate conditions, sea level rise scenarios, and potential impacts to water quality and supply into the regional water management models used to support the Lower East Coast Water Supply Plan, environmental resource permitting, and consumptive use permitting.

WS-4	Ensure consistency in efforts to map saltwater intrusion across the region to create better information and improve management decisions for protecting regional freshwater aquifers. Coordinate the methodology and schedule for the saltwater intrusion mapping used to maintain and update the regional saltwater intrusion baseline mapping conducted by the South Florida Water Management District and the U.S. Geological Survey, at a minimum of every five years. Utilize saltwater intrusion models and validated data to identify wellfields and underground infrastructure at risk of contamination or infiltration by saltwater due to rising sea levels.
WS-5	Coordinate among city and county government public works agencies, water utilities, and other operators of water infrastructure to develop and maintain local and regional inventories of existing potable water supply wellfields, treatment and distribution systems, wastewater treatment and collection infrastructure, and septic tanks and drain fields. Assess the potential for climate change impacts on each component of water infrastructure under different climate change scenarios and develop adaptation strategies for affected systems, including infrastructure that may require replacement, reinforcement, or relocation to ensure the long-term viability of the system.
WS-6	Track the climate resilience projects for water infrastructure being designed and built by local governments and utility districts across Southeast Florida to aid local peer learning. Develop a regionally coordinated geodatabase to illustrate and catalog local and regional resilience projects, planning tools, and infrastructure investments, and a formal data management strategy for water infrastructure projects that could be scaled in the future to include other infrastructure (e.g., communications, transportation, and energy).
WS-7	Modernize permitting, planning, and design standards for development and infrastructure improvements to drainage systems, surface water management systems, and finished floor elevations based on updates to groundwater table maps, flood elevation maps, and tidal elevations. Prioritize design standards that maintain project compatibility, infrastructure connectivity, and level of service under potential future climate conditions.
WS-8	Coordinate with the South Florida Water Management District and local public officials to request a comprehensive assessment of the Central and South Florida flood control system by the U.S. Army Corps of Engineers. Determine the regional flood control system's performance under potential future climate conditions based on the U.S. Army Corps of Engineers' comprehensive assessment. Develop a resilience strategy that will ensure existing levels of service are maintained or improved under future conditions.
WS-9	Advocate for an update of the Florida Department of Environmental Protection's Stormwater Management Rule, "SFWMD Environmental Resource Permit Applicant's Handbook – Volume II," through the Southeast Florida Regional Climate Collaborative Policy advocacy process. Advocate for rule changes that integrate potential future climate conditions and stormwater harvesting initiatives in permitting criteria at all levels, including average wet season groundwater elevations; unified sea level rise projections; and intensity, duration, and frequency curves.
WS-10	Continue to utilize a combination of inundation maps and stormwater models to identify areas and infrastructure at increased risk of flooding. Evaluate the potential impacts of changes in groundwater levels on wastewater and stormwater systems (including septic systems, wastewater collection, and conveyance and storage systems), with consideration of water quantity and quality (including public health-related metrics). Use the results of the above-stated analyses as the basis for site planning and regulation, and for identifying and prioritizing adaptation needs and strategies.
WS-11	Promote the development of green infrastructure and alternative, net-zero greenhouse gas emission strategies for water supply, stormwater, and wastewater management focused on achieving a balance between water availability and consumption, limiting energy use to the amount produced on-site via renewable energy, and eliminating solid waste sent to landfills. Create

	comprehensive strategies to advance the multiple benefits and sustainability of services provided by net-zero practices.
WS-12	Coordinate across regional, state, and federal agencies to develop and apply appropriate hydrologic and hydraulic models to further evaluate the efficacy of existing water management systems and flood control and drainage infrastructure under variable climate conditions. Quantify the capacity and interconnectivity of the surface water control network and develop feasible adaptation strategies. Develop common data standards and database protocol for maintaining water management system components.
WS-13	Convene forums to promote a joint assessment and planning strategy involving local water utilities, wastewater service providers, water managers, and partners to the Southeast Florida Regional Climate Change Compact for coordinated consideration of: a) stormwater use and disposal; b) rainfall-derived inflow and infiltration; c) traditional and alternative water supplies; d) wastewater disposal; e) expansion of reuse and water conservation measures (e.g., maintaining adequate aquifer levels and minimizing the use of potable water for irrigation purposes); and, f) amendments to applicable development codes and regulations. Develop local integrated water management plans based on joint assessment and planning strategies.
WS-14	Undertake a comprehensive evaluation of stormwater improvements necessary to expand surface water storage, enhance water quality treatment, and reduce stormwater discharges in the delivery of flood protection needs and environmental priorities for the Everglades and estuarine and coastal ecosystems. Improve stormwater management through distributed storage, integrated stormwater systems, and additional best management practices.
WS-15	Encourage collaborative programs with local universities—including the Compact's partnership with the Florida Climate Institute—to improve community and stakeholder communication and education efforts regarding potential local and regional climate change impacts. Build partnerships and technology exchanges with public, private, academic, domestic, and international partners to bring additional experience and innovation to resilience planning, projects, and decision support. Continue to encourage, foster, and support collaborative investigative work and scientific research that improves water resource management, including: a) downscaling global climate models to represent precipitation patterns at the regional and local scale and to develop standardized precipitation scenarios for the region; b) identifying and targeting gaps in monitoring and data availability (e.g., light detection and ranging, environmental and water quality data, or data supporting regional climate indicators) to improve the quantification of the hydrologic system and its response to climate change (e.g., evapotranspiration, surface and groundwater levels, water quality, precipitation, and local sea level) through local program efforts, agency collaborations, and advocacy for additional state and/or federal resources, as needed; and c) developing integrated risk-based decision-support tools and processes for application in the analysis and selection of infrastructure design, water resource management, natural systems management, and hazard mitigation alternatives. Tools should facilitate the consideration of the potential economic costs of comparative planning scenarios, management decisions, and infrastructure investments, as well as the evaluation of potential trade-offs.
WS-16	Cultivate partnerships with regional, federal, and state agencies and professional associations with expertise in integrated water resource planning as sources of important research, including: a) the U.S. Army Corps of Engineers Institute for Water Resources; b) the United States Geological Survey; c) the Environmental Protection Agency; d) the National Oceanic and Atmospheric Administration; and, e) water foundations..
WS-17	Identify, incorporate, and prioritize preferred climate adaptation improvement projects pertaining to water supply, wastewater systems, stormwater management, and flood protection as part of

	capital improvement plans. Develop projects, pursue funding options (including independent funding mechanisms), and implement projects.
WS-18	Coordinate the implementation of innovative water management technologies across multiple jurisdictions as part of piloted solutions to foster shared investments. Facilitate knowledge sharing about the results, costs, and savings from management technologies. Scale successful cross-jurisdictional technologies to reduce the potential for redundant investments and achieve economies-of-scale while fairly distributing costs and benefits across multiple project beneficiaries.
WS-19	Identify existing underperforming infrastructure and implement adaptable infrastructure strategies that facilitate targeted investments, allow managed performance, and achieve greater flexibility in system operations.
WS-20	Continue to support the Comprehensive Everglades Restoration Plan (CERP) and its updated versions as fundamental to Everglades restoration. Contribute to the ongoing implementation of CERP and updates to implementation plans (such as the Integrated Delivery Schedule) through the South Florida Ecosystem Restoration Task Force and relevant working groups. Publicize the role of CERP as a regional climate resilience strategy, particularly as a way to increase freshwater flows to the Everglades system, which improves water quality, maximizes regional freshwater storage and aquifer recharge, and creates the potential to abate saltwater intrusion, an increasingly important effort under variable climate conditions and in the face of sea level rise.
WS-21	Develop new and combine existing land acquisition priorities in a regional setting to protect, preserve, and enhance water storage. Develop regional and distributed surface water storage (e.g., C-51 Reservoir Project and interconnected urban systems) to increase the potential for stormwater capture and reuse for water supply, aquifer recharge, flood management, and environmental benefits.

1. Source: Water Supply Recommendations from the Regional Climate Action Plan 2.0 https://southeastfloridaclimatecompact.org/recommendation-category/ws/)

The Resilient Utility Coalition established in 2016 seeks to advance utility infrastructure resiliency efforts and provide essential value to its members and partners. The Resilient Utility Coalition provides leadership in assessing and adapting utility operations to address risks and improve water management decision-making in the face of climate uncertainty. In its strategic plan, it has also prioritized the concept of One Water including the development of the One Water Academy.

Recognizing that water is a shared resource, the One Water approach, promoted by the U.S. Water Alliance, is essentially an expanded version of integrated water resources planning and envisions managing all water in an integrated, inclusive, and sustainable manner to secure a bright, prosperous future for our children, our communities, and our country. One Water approaches are progressing in multiple arenas: from using advanced technologies to recover nutrients and energy from wastewater; to using green stormwater techniques to mitigate flooding while beautifying neighborhoods; to undertaking watershed-level planning and collaboration to address water quality issues; to implementing innovative financing and partnership models.

B. Broward County-Wide Integrated Water Resource Plan

In 1997, Broward County initiated its IWRP to improve the effectiveness and efficiency of local water management. The principle of the IWRP is that water should be viewed as a regional resource, independent of municipal and utility service area boundaries.

Broward's IWRP, approved by the County Commission in 2010, has four main objectives:

- To make the most of local water resources, so that Broward's long-term water supply needs are met;
- To coordinate a diverse water management community, ensuring the efficient and effective management of Broward's water resources;
- To match up local water sources and users to ensure that water supplies are available when and where they're needed; and
- To diversify water supplies so that the needs of urban and natural systems are met under wet and dry conditions.

A fifth objective was added in the 2019 IWRP Update: Promote water resources resiliency by evaluating future conditions, including potential climate impacts, and adopt strategies to mitigate, adapt, and prevent disruptions to our overall goal of more efficient and effective water management.

Successful implementation of the plan requires coordination amongst a diversity of stakeholders including water managers, utility directors, drainage districts, and state and local government entities. The water management community in Broward County consists of 27 water providers, 23 special districts and 15 wastewater providers across 31 municipalities, Table WS2 below.

Table WS2 Lists of Municipalities, Utilities, and Districts in Broward County

Broward County Municipalities (https://en.wikipedia.org/wiki/Broward_County,_Florida)				
City of Coconut Creek	City of Cooper City	City of Coral Springs	City of Dania Beach	Town of Davie
City of Deerfield Beach	City of Fort Lauderdale	City of Hallandale Beach	Town of Hillsboro Beach	City of Hollywood
City of Lauderdale Lakes	Town of Lauderdale-by-the-Sea	City of Lauderhill	Village of Lazy Lake Village	City of Lighthouse Point
City of Margate	City of Miramar	City of North Lauderdale	City of Oakland Park	City of Parkland
Town of Pembroke Park	City of Pembroke Pines	City of Plantation	City of Pompano Beach	Village of Sea Ranch Lakes
Town of Southwest Ranches	City of Sunrise	City of Tamarac	City of Weston	City of West Park
City of Wilton Manors				

Potable Water Providers (SFWMD 2018 LEC Update-Appendix A)				
Broward County-District 1	Broward County District 2	Broward County District 3	Cooper City	Coral Springs
Coral Springs Improvement District	Dania Beach	Davie	Deerfield Beach	Fort Lauderdale
Hallandale	Hillsboro Beach	Hollywood	Lauderhill	Margate
Miramar	North Lauderdale	North Springs Improvement District	Oakland Park	Parkland Utilities, Inc.
Pembroke Pines	Plantation	Pompano Beach	Royal Utility	Seminole Tribe of Florida
Sunrise	Tamarac	Tindall Hammock Irrigation and Soil Conservation District		
Drainage / Water Control Districts				
Bonaventure Development District	Broward County Water Control District #2	Broward County Water Control District #3	Broward County Water Control District #4	Central Broward Water Control District
Cocomar Water Control District	Coral Bay Community Development District	Cypress Cove Community Development District	Indian Trace Development District	Lauderdale Isles Water Management District
North Lauderdale Water Control District	North Springs Improvement District	Oakridge Community Development District	Old Plantation Water Control District	Pine Tree Water Control District
Plantation Acres Improvement District	South Broward Drainage District	Sunshine Water Control District	Tindall Hammock Irrigation and Soil Conservation District	Turtle Run Community Development District
Twin Lakes Water Control District	West Lake Community Development District			
Wastewater Providers				
Broward County North Regional	Cooper City	Coral Springs Improvement District	Town of Davie	Ferncrest
Fort Lauderdale – G.T. Lohmeyer	Hollywood	Margate	City of Miramar	City of Pembroke Pines
Plantation Regional	Sunrise No. 1 (Springtree)	Sunrise No. 3 (Sawgrass)	Sunrise Southwest	

The work of the Water Resources Assessment Program within Broward County's EPCRD provides vital information and guidance that support the programs in the Broward County IWRP and the development of AWS sources such as water reuse, harvesting of excess stormwater (C-51 Reservoir Project), the use of the Upper Floridan Aquifer, ASR, and secondary canal integration. Among these urban water strategies, Broward County has prioritized water conservation as the least costly effort to offset future water demands. The technical assessment of these projects and planning for future mitigation strategies against climate change are investigated through several robust hydrologic models, developed over many years and with significant municipal partner support.

Water Reuse in Broward

Broward County has focused on the advancement of beneficial reuse and, in 2014, developed the Regional Reuse Master Plan in coordination with its regional partners. This effort included the active participation of local municipalities, water managers, water and wastewater utilities, local planning agencies, Florida Department of Transportation, and other state and regional agencies. This plan sets the foundation for the long-term implementation strategy to further regional reclaimed water development through several innovative and dynamic planning tools. The plan data was updated in 2018 and report design was modernized from a paper document to digitally interactive. The plan is now delivered to our regional partners in the new interactive online format. The Regional Reuse Master Plan and Implementation Strategy support a cost-effective, regional approach for the development of beneficial reuse throughout the County's water and wastewater providers.

The objective is to advance cost-effective development of reclaimed water initiatives through coordinated planning and implementation. The Plan is designed to:

1. Provide coordination and support among Broward County, state agencies, water and wastewater treatment providers, and municipalities to deliver, update, and maintain a comprehensive database of existing and planned reclaimed water infrastructure.
2. Coordinate the installation of reclaimed water lines for recommended projects with public works projects such as transportation improvements, stormwater and other wastewater improvement projects that may be necessitated through local, state, and federal permitting requirements.

To support this strategy, IWRP grant funds provide preferential funding consideration for those projects that are contained within and are consistent with the Reuse Master Plan. Feasibility and design projects as well as construction projects are granted bi-annually as available funds allow. Permitting incentives include the potential reuse credit that the SFWMD could allow as an offset to increase traditional water sources withdrawals in a CUP.

Additional financial incentives may be available through state funding as indicated in Section 373.1961(3)(f)(6), F.S., that provides encouragement for projects in which the construction and delivery to end users of reuse water is a major component. This statute requires governing boards to give such projects significant weight when selecting AWS projects for funding under Section 403.89, F.S.; Water Protection and Sustainability Program (Florida Department of Environmental Protection [FDEP], 2016).

Requirements of the outfall program include a functioning reuse system that reuses a minimum of 60 percent of the facility's actual flow on an annual basis installed no later than December 31, 2025. State or the SFWMD funding assistance must give first consideration to water supply development projects that replace existing sources or implement reuse projects to eliminate ocean outfalls. Broward County is planning to meet the 60 percent reuse requirement by expanding its public access irrigation in Northern Broward and Southern Palm Beach Counties, including expanding reuse systems in the Cities of Pompano Beach and Coconut Creek and North Springs Improvement District which is described in more detail below under the Data and Analysis section of this report.

C-51 Reservoir Project

Over the past decade, the SFWMD, Lake Worth Drainage District, Palm Beach Aggregates, local governments, water managers, and public water supply utilities from Broward and Palm Beach County jointly investigated the feasibility of a regional reservoir to capture and store excess surface water runoff discharged to Lake Worth Lagoon, primarily during wet weather conditions, and release into the C-51 Canal during dry periods to meet water demands.

The C-51 Reservoir project is a public-private partnership for the construction of 60,000 acre-feet of storage for use as an AWS source in Southeastern Florida. Diversion and improved management of freshwater flows was formally identified as a priority restoration strategy for the Lake Worth Lagoon dating to the 1992 Restudy of the C & SF Flood Control Project. C-51 Reservoir Project is presented at the 2018 LECWSP as an AWS source to meet with regional projected 2040 water demands.

C-51 Reservoir Project location is adjacent to the SFWMD's existing L-8 Flow Equalization Basin in Palm Beach County and is expected to share the same impermeable geologic formation that provides for significant inground ground storage capacity with limited seepage losses or additional construction requirements. The initial intended purpose was to capture excess stormwater discharged to the Lake Worth Lagoon via the C-51 Canal. Currently, the benefits of this proposed project include:

- Reduces harmful water quality and quantity discharges to the Lake Worth Lagoon via the S-155 structure.
- Supports water quality improvements in the Everglades Protected Areas by offering additional storage and, in conjunction with the L-8 Flow Equalization Basin, optimizing flows to the Stormwater Treatment Areas (STAs).
- Operated in conjunction with the L8 Flow Equalization Basin, could aid the SFWMD in meeting objectives of the Loxahatchee River Watershed Restoration Project.
- Opportunity to improve water quality delivered to the STAs via blending with the L8 Flow Equalization Basin water.

- Mitigates stormwater impacts and flooding for Western and Central Palm Beach County.
- Mitigates for saltwater intrusion and protects wellfields in coastal communities.
- Serves as a regional AWS source.
- Supports water resource protection and potential adaptations strategies considering sea level rise and during drought.

Among economic benefits, there are:

- Provides "Economies-of-Scale" as a regional water resource development project providing diverse benefits to the region.
- Capitalizes on the current construction and engineering work on the existing L-8 Flow Equalization Basin, including the use of the L-8 Flow Equalization Basin's intake structure and pumping facilities.
- The SFWMD will operate and maintain the C-51 Reservoir Project in conjunction with the L-8 Flow Equalization Basin, resulting in operational coordination and reduced costs.
- Provides a cost-competitive solution relative end-of-pipe water quality treatment, environmental degradation and economic losses, impacts of flooding, and the costs of alternative water supplies and treatment technologies.
- Capitalizes on current mining activities and construction of rock pit.
- Relies largely upon existing conveyance infrastructure.
- Reduces longer-term need for new water infrastructure and energy-intensive treatment technologies.

Hydrologic modeling indicates the ability to capture enough basin runoff to reduce excess stormwater flows from the western C-51 Basin flows to the Lake Worth Lagoon by approximately 40% with a concomitant reduction in associated nutrient loads. Excess stormwater capture in the C-51 Reservoir Project can be later redistributed through the existing canal network for the benefit of providing aquifer recharge and helping to sustain regional water resources. The C-51 Reservoir Project is modeled to support approximately 150 million gallons per day (MGD) in stormwater reuse for beneficial purposes while achieving critical water quality improvements in the Lake Worth Lagoon.

In January 2017, the SFWMD designated the C-51 Reservoir Project Phase 1 as a pilot AWS development project, pursuant to Section 373.037, F.S. public water supply utilities have executed agreements with the property owners to purchase capacity as part of total reservoir storage. The utilities have received or are processing modifications to their water use permits to reflect this AWS source as a means for meeting future demands.

The mining operation for Phase 1 is complete and designed to store an estimated 14,000 acre-feet of surface water and provide 35 MGD of canal/SAS recharge near public water supply withdrawals. The FDEP has issued a diversion and impoundment consumptive use permit and an environmental resource permit for construction and operation of Phase 1. Phase 2 of the project could provide an additional 46,000 acre-feet of storage, most likely for natural systems [Section 373.4598, F.S.]. The FDEP has issued a conceptual environmental resource permit for Phase 2.

Additionally, water routed south to the Hillsboro Canal could be redistributed to recharge local canals and drainage districts in Broward County, pursuant to an operations and maintenance agreement between the SFWMD and Palm Beach Aggregates and implemented through an operating plan with the SFWMD (under development) or other local water control districts.

To date, agreements have been executed for 20 MGD of storage capacity out of the available 35 MGD of storage capacity in Phase 1: Broward County (6 MGD); Sunrise (5 MGD); Hallandale Beach (1 MGD), Dania Beach (1 MGD), Margate (2 MGD), Fort Lauderdale (3 MGD) and Pompano Beach (2 MGD). Palm Beach Aggregates has indicated that construction financing will move forward based on the signed agreements for 20 MGD of storage capacity. Construction financing is anticipated to be available by August 31, 2020 with construction completed within approximately 24 months following financing. Permitting for each of these participants is in various stages but not yet complete. In 2017, the Florida Legislature approved the project as a priority water supply project under enabling legislation Senate Bill 10. Phase 2 would expand the project area to include 46,000 acre-feet of storage and potentially another 115 MGD, which is envisioned for environmental purposes. Senate Bill 92 (2019) clarified language and the intent of the project and allowed the SFWMD to negotiate for any portion of the project not already committed to partners for water supply.

Floridan Aquifer

As an AWS, the expanded use of the Floridan Aquifer system is currently being investigated with respect to its long-term viability as a water supply resource through additional modeling and studies. Broward County has, in cooperation with USGS, completed Phase 1 Feasibility Study of the Upper Floridan Aquifer in March 2014. The study compiled all available well information and commissioned a new well (G-2984) to be drilled, cored, and logged. Using borehole and core sample data (84 wells at 33 sites), the hydrogeologic framework of the Floridan Aquifer system in Eastern Broward County was delineated. This effort helped to construct unique cross-sections and maps representing the stratigraphic and hydrogeologic units of the Floridan Aquifer system in urban Broward County. An additional component of the project was to complete seismic profiling along approximately

14 miles of the Hillsboro Canal, which resulted in seismic reflection data that were then correlated to the borehole geophysical data (Reese et al., 2014).

The results offer better definition of the stratigraphic and hydrogeologic characteristics of the aquifer, which will improve upon the selection of new well locations or for water storage options, such as ASR. Building on the successful use of seismic profiling in the first study, Phase 2 of this Feasibility Study was commissioned and completed in 2017 (Cunningham et al., 2018). It further refined the hydrogeologic framework and regional extent of information by collecting 80 miles of high-resolution seismic profiles from canals in Broward County along with well logs and cores or cutting from 44 wells. Mapping of the Oldsmar, Avon Park, and Arcadia formations was completed over the 425-square mile study area. In addition, many unconformities that might identify faults that are either near-vertical reverse faults or karst collapse structures throughout the County. Water utilities in these areas may consider further studies around these features when planning project near their vicinities.

The SFWMD also completed limited water supply modeling of the Floridan aquifer as part of the 2018 LEC plan update. The model included an allocation of 3.0 MGD for BC 2A/NR by the year 2040. This pumping stress and other pumping in the region resulted in a drop of 5.1-10 ft in groundwater levels over 2016 levels but no impact to water quality (chloride levels) in the Upper Floridan region where the wells would be placed. Although initially positive for Floridan development, model results would have to be rerun with current planned rates and well sites should BC go forward with the utilization of the Floridan which is not necessary at this time.

District 2A Aquifer Storage & Recovery (ASR)

In 1993, a permit to construct an ASR well at Broward County District 2A WTP was submitted to FDEP. The system was designed to inject treated water into the upper Floridan aquifer at approximately 1,100 feet below land surface. Water Quality Criteria Exemptions for color, iron and total dissolved solids were obtained. Five testing cycles were completed as shown in Table WS3 beginning in 1998 and completing six years later. Cycle test results provided in Table WS4 are varied but, generally average around 30 percent in the larger cycles (Hazen & Sawyer, 2004).

Table WS3 District 2A ASR Cycle Testing [1]

Cycle	Recharge (days)	Storage (days)	Recovery (days)
Cycle 1: July 9, 1998 to July 21, 1998	11	0	1.5
Cycle 2: July 27, 1998 to November 12, 1998	91	0	17
Cycle 3: November 13, 1998 to	87	9	21
Cycle 4: November 12, 2003 to December 31, 2003	30	0	20
Cycle 5: January 1, 2004 to March 3, 2004	33	0	29

1. Source: Hazen & Sawyer Technical Memorandum Broward County Office of Environmental Services 2A Water Treatment Plan – Aquifer Storage and Recovery, dated October 6, 2004.

Table WS4 District 2A ASR Cycle Testing Results [1]

Cycle	Rate In (MGD)	Volume In (MG)	Rate Out (MGD)	Volume Out (MG)	Percent Recovery (%)
1	2.01	22.13	1.00	1.50	6.8
2	2.15	195.84	2.16	36.65	18.7
3	2.14	185.94	2.98	56.62	30.5
4	1.79	53.74	0.61	12.18	22.7
5	1.85	61.19	0.59	18.27	29.9

1. Source: Hazen & Sawyer Technical Memorandum Broward County Office of Environmental Services 2A Water Treatment Plan – Aquifer Storage and Recovery, dated October 6, 2004.

According to the Hazen & Sawyer 2004 Technical Memorandum, percent recoveries of between 75 and 90 percent are needed for an ASR well to be viable for use. The memorandum cites the casing setting depth as one of the possible causes for low recovery percentages during cycle testing. Additionally, the District 2A ASR well was limited by the Broward County Health Department to an initial recovery chloride concentration of 225 milligrams per liter (mg/L) which limited the recovery volume significantly. The chloride limitation was later increased to 1,000 mg/L but, the well was no longer in use. When the well came up for Class V permitting with FDEP in 2013, Broward County made the decision based on the ASR well percent recovery and permitting costs to abandon the ASR well.

Site 1 Hillsboro ASR

ASR is a recognized AWS technology and can serve as an effective component of an integrated water management system. The Site 1 Hillsboro Aquifer ASR project was originally designed, constructed, and tested over an 18-year period as a potential component of CERP. The project required the collaboration of a multiagency, multidisciplinary team of hydrogeologists, engineers, and environmental scientists. The Hillsboro ASR system was built to capture excess surface water from the Hillsboro Canal, store it in the Upper Floridan Aquifer, and recover stored water back into the Hillsboro Canal when surface water levels are low. The ASR well was constructed in 1999/2000 and consisted of a 24-inch diameter casing completed to a depth of 1,015 feet below land surface in the Upper Floridan Aquifer. The surface facilities were constructed between 2006 and 2007 and consisted of an intake/discharge structure, screen filters, UltraViolet disinfection units, pumps, piping, valves, electrical controls, and meters. The well was designed to recharge and recover approximately 5 MGD of surface water.

Initial background water quality was collected and analyzed in 2008 prior to cycle testing. Cycles 1, 2, and 3 were performed between 2010 and 2012. The well remained inactive between 2012 and 2016. A second background water quality sampling was performed in 2016 and Cycle Test 4 (SFWMD 2018) was completed in 2017. The below is a summary of the testing conclusions.

- During recovery, the ASR well was to flow freely back to the Hillsboro Canal under artesian pressure at a flow rate of 2 MGD.
- The recovery efficiency for Cycle 4 was approximately 60 percent, greater than previous cycles.
- Water quality data indicated that recharge water mixed and diffused with Upper Floridan Aquifer groundwater at distances of 330 and 1,010 feet away from the ASR well.
- Recovered water had an initial arsenic concentration of 25 parts per billion (ppb), which decreased to less than 10 ppb after 3 weeks.
- Arsenic was not detected at distance from the ASR well during the recovery period.

The SFWMD approached BCWWS following the completion of Cycle 4 to suggest a limited operation of the well facilities to support urban water supply demands. Due to the age and required maintenance of the surface facilities, the permit requirements, and the need to continue building a storage zone with hope of improving the well recovery efficiency, BCWWS declined the offer of limited operation.

Secondary Canal Integration

Secondary canal integration remains a relatively attractive urban water management strategy given the vast network of canals that exist in Broward County and the relatively

inexpensive infrastructure (culverts, pumps, etc.) required to implement greater integration of the system. Although progress has been made on the Northern Broward County Recharge System, it has not yet been completed. There are three identified projects that need to be completed to integrate the system:

- The C-1/C-2 Interconnect near Sample Road and the CSX Railroad. The project has been designed and construction funding is being sought.
- The study of a potential C-4 Interconnect between north and south Tradewinds Park was completed and it was determined that the environmentally friendly directional drilling project is not financially feasible at the present time.
- The C-7 Interconnect just north of Sample Road in the Coconut Creek Main Street Project will coincide with development of the area. The basin divide control structure is being constructed with the development of the parcel just to the north of Sample Road. The interconnect will be complete when the final canal segment is built with the development of the remaining farmland.

Depending upon the final routing of water deliveries associated with development of the C-51 reservoir project, additional construction may be required in the central and southern parts of the County to further integrate the system.

Water Use Efficiency/Conservation

The County has implemented diverse water conservation initiatives to protect the quantity and quality of Broward's existing and future water resources to help meet our current and projected demands. Consistent with this objective, the County has implemented a broad set of water conservation programs under the "Water Matters" campaign which are designed to produce long-term demand reductions along with improvements in water quality. These programs, targeted at various user groups, include: NatureScape Broward, Know the Flow, Water Matters Day, Conservation Pays, NIS, and the NatureScape Broward School Board Environmental Partnership Agreement. The overall goal of the Water Matters programs is to reach a sustained minimum 10% reduction in water use Countywide over 20 years. Further support for water conservation is found in other conservation-oriented measures, including changes to the Florida Building Code for cooling towers and high efficiency plumbing devices, year-round irrigation measures, model irrigation codes, Go Green Sustainability Programs, and other water conservation policies and regulations. The water conservation initiatives are listed below.

- Conservation Pays Program. This effort was launched in 2011 in collaboration with 18 partners to provide a coordinated regional campaign focused on water conservation and the distribution of rebates and other incentives. Rebate dollars are used for the

replacement of older, wasteful toilets in addition to the distribution of other water efficient fixtures and devices such as aerators and commercial pre-rinse spray valves. A consistent marketing and media campaign advances water conservation efforts as part of the Commission's value of encouraging investments in renewable energy, sustainable practices, and environmental protection. Additional Commission support is promoted by the goal to increase water quality protection efforts and lead creative approaches to water storage and aquifer recharge, as well as diversification of water supplies regionally. To date, the program has saved more than two billion gallons of water.

- NatureScape Irrigation Services. Launched in 2005, the NIS is implemented by the EPCRD with cost-share provided by BCWWS and 18 local water utilities. The program targets large water users, including government facilities, parks, schools, and homeowner associations, where the greatest potential exists for significant water savings. To date, water savings exceed one and a half billion gallons with over 3,000 irrigation system evaluations. Best management practices that encourage the 'right plant in the right place' and smart irrigation help to promote water conservation messaging that adds to long-term water savings.
- NatureScape Broward Program. Launched in 2003, the NatureScape Broward program promotes water conservation, water quality protection, and the creation of wildlife habitat through Florida-friendly landscape practices that encourage the prudent use of water resources, and the planting of native, non-invasive and other drought-tolerant plants in Broward County. Broward County was the first county in the U.S. to be certified under the Community Wildlife Habitat program. In addition, there are 14 certified and 9 registered County municipalities and over 4,500 landscapes that have been certified to date.

Technical Water Resources Assessment

The numerical hydrologic models developed within the IWRP program provide for informed decisions and sustainable investments essential for comprehensive and integrated water resource management strategies throughout Broward County and the LEC planning region.

In 2006, Broward County's EPCRD contracted with the USGS to develop a numerical model to evaluate to various influencing factors on the saltwater movement within the Biscayne Aquifer in the northern third of the County. This tool was proven to be effective in representing historic and future conditions and was demonstrated to have utility as a planning tool for future water resources projects and development of resilience strategies. This modeling effort was subsequently expended to the central and southern portions of the County to simulate historic saltwater intrusion and to test the extent to which wellfield

pumpage, surface water management and sea level rise contribute to and influence the movement of saltwater and how the aquifer can be expected to respond to future climate conditions. The tool also investigates the implications on the viability of water supplies and can be used to identify and test possible adaptive strategies.

The County is also enhancing this investment with concurrent development of an Inundation Climate vulnerability model focused on coupled hydrologic impacts of saltwater intrusion, surface and groundwater elevations, and stormwater inundation. This model, developed in cooperation with USGS, builds upon the County's Variable Density Model to assess the influence of changing climatic conditions on urban water resources and infrastructure. The initial effort integrated bias-corrected, dynamically downscaled data from Global Circulation models into the updated surface/groundwater model for predictions Countywide. A smaller study of the County was later refined using SWR and URO components that offered more detailed conceptualization of the surface/groundwater interactions, used to assess the predictive scenarios and comparison of alternative water resource strategies. Based on the successful implementation of the SWR and URO packages, Broward County is currently partnering with USGS to advance the expansion of the two packages throughout the entire urban extent of the County.

In February 2017, Broward County approved the creation of a Future Conditions Map Series in the Broward County Code of Ordinances and, effective July 01, 2017, adopted the first regulatory map of the series, the Future Conditions Average Wet Season Groundwater Elevations Map. The approved map ensures that future climate conditions are accounted for in the design and construction of local surface water management systems and that future investments will deliver the necessary level of flood protection and water quality treatment necessary for the duration of the expected useful life of both public and private investments. This map provides an important basis for advancing the resiliency standards and investments needed across our entire region, as it provides a model for the establishment and application of modernized standards based on the integration of science and technology in policy and planning and community buy-in achieved through a comprehensive public process.

The calculated average groundwater elevation is based on model outputs for the wet season months of May through October over a ten-year period of 2060-2069. The models used to simulate average future conditions were the Broward County Inundation Model and the Broward County Northern Variable Density model, both developed in cooperation with the USGS. The future conditions applied in the modeling process consist of both precipitation and sea level rise. The future precipitation pattern is based on the Center for Ocean-Atmospheric Prediction Studies downscaled Community Climate System Model

global model and represents an increase of 9.1% rainfall from the base case of 1990-1999 (53.4 inches/year to 58.2 inches/year). Sea level rise was based on the USACE National Research Council Curve 3, which equates to an increase of 26.6 to 33.9 inches to the future period from 1992 levels.

In the recent restudy of Flood Insurance Rate Maps completed in 2014 by FEMA, the County's MIKE SHE/MIKE 11 model was utilized and updated. The MIKE SHE platform was originally developed to look at surface water groundwater interaction issues beginning with the North Aquifer Drainage Assessment (NADA), which was then extended to the Central Aquifer Drainage Assessment (CADA [2000-2002]) and South Aquifer Drainage Assessment (SADA [2003-2005]). The County then combined the NADA, CADA, and SADA to form the Consolidated Broward County MIKE SHE model. As part of the 2011 Integrated Water Resources Master Management Plan, the consolidated model was updated to run additional water recharge projects to test whether demands for future population projections could be sustained without adverse conditions to the Biscayne Aquifer. In 2018, Broward County began using the results of the FEMA study to calculate 100-year flood elevations that are anticipated to occur in 2070, accounting for sea level rise and more intense rainstorms. The effort includes data collection of recent or previously not included drainage infrastructure, refined model grid and associated LiDAR, land use update, addition of detention storage and ponded drainage routine, model calibration to a recent flooding storm event, and incorporation of future tide levels and a 100-year rainstorm event. It is anticipated the modeling will be completed in the Fall of 2019 and, once approved, will be formalized as the second map of the Future Conditions Map Series.

C. Comprehensive Everglades Restoration Plan

Among the over 60 CERP components, the Central Everglades Planning Project, Broward Water Preserve Areas (WPAs), and Secondary Canal Interconnect.

Central Everglades Planning Project

The USACE states that CEPP "will identify and plan for projects on land already in public ownership to allow more water to be directed south to the central Everglades, Everglades National Park, and Florida Bay." The full project's design will send an approximately 210,000 acre-feet of water south from Lake Okeechobee each year. The WCAs are a major resource affected by this future project. Thus, this regional CERP project is very important locally to Broward County as its water supply is critically linked to the WCAs. The CEPP was authorized in the 2016 Water Resources Development Act 2016. Currently, the USACE is working on a validation study to implement Phase 1 in the southernmost area that will increase flows to Everglades National Park.

(http://discover.pbcgov.org/wrtf/PDF/Documents/LOSOM_Broward_scoping_comments_17Apr2019.pdf)

Water Preserve Areas

The WPAs are a series of marshes, reservoirs, and groundwater recharge areas along the eastern side of the WCAs in Broward, Palm Beach, and Miami-Dade Counties. In Broward County, the WPA extends along the western urban limits, adjacent to Levees 37 and 68A. The projects within the WPAs are intended to serve multiple uses such as increasing the spatial extent of wetlands, reducing seepage losses from the WCAs, improving water supply and quality, and establishing a buffer between the Everglades and developed areas. The benefits to the County's urban area include: the storage of stormwater runoff; groundwater recharge; management of saltwater intrusion; and increased urban water supplies. The WPAs are in the CERP and were authorized in the 2014 Water Resources Reform and Development Act. The current USACE schedule projects the C-11 component to be constructed by 2023.

(https://usace.contentdm.oclc.org/utils/getfile/collection/p16021coll11/id/2552

The USACE forecasts the WPAs' remaining construction timelines beyond 2023.

Secondary Canal Improvement Project

The Broward County Secondary Canal Improvement Project, as part of the CERP, is a water management project to optimize the integration and operation of the County's secondary canal system and support Everglades restoration by reducing the County's reliance on water from the regional system.

Authorized and to be funded by the U.S. Congress, State of Florida, and local government, the goals of the Broward County Secondary Canal Improvement Project are to capture as much annual rainfall as possible for storage and recharge of the Biscayne Aquifer, to maintain water levels in wetlands, and to stabilize saltwater intrusion. Additionally, through more efficient management of the local water resources, urban demand on the regional system is expected to be reduced, as well as seepage losses from the WCAs, as the project has the potential to raise groundwater levels on the east side of the levee.

DATA AND ANALYSIS

The following section provides information in support of the requirements of Section 163.3177(1)(f), F.S., as outlined:

- All mandatory and optional elements of the comprehensive plan and plan amendments must be based upon relevant and appropriate data and an analysis by the local government that may include, but not be limited to, surveys, studies, community goals and vision, and other data available at the time of adoption of the comprehensive plan or plan amendment. (Section 163.3177(1)(f), F.S.).
- Data must be taken from professionally accepted sources (Section 163.3177(1)(f)2., F.S.) and reacted to in an appropriate way, to the extent necessary as indicated by the data available on that subject at the time of adoption of the plan or plan amendment at issue. (Section 163.3177(1)(f), F.S.).

The planning horizon for the 2020 Work Plan spans 20 years, covering 2020 to 2040.

A. County-Wide Population Analysis

This 2020 Work Plan identifies and analyzes the future water supply needs for the BMSD areas of Broward County, and those areas serviced by BCWWS. The role of the EPCRD is to identify the future water supply needs of BMSD areas of Broward County and to present regional strategies supporting Countywide water supply needs and water resource management. The role of BCWWS is to identify the future water supply needs of their service areas, which include both BMSD areas and incorporated areas, and to determine strategies to meet any unmet demands.

Several of the BMSD areas Figure WS4 are provided water service by BCWWS; hence these areas were included in the BCWWS analysis. For the remaining BMSD neighborhoods, the City of Fort Lauderdale is the largest of the water utility providers while the City of Sunrise is only providing for six residential units. EPCRD has coordinated with the Fort Lauderdale Planning and Zoning Department and the water utility in identifying the current and future water supply needs within their water utility's service area.

Needs assessments were developed based on current utility operations and the existing customer base, compared to population projections through 2040. The population modeling was performed by Broward County Planning and Development Management Division (BCPDMD) using the Broward County Traffic Analysis Zones (TAZ) and municipal forecasts updated in 2017 to develop the projected populations based on the University of Florida's BEBR Bulletin 175, "Detailed Population Projections by Age, Sex, Race, and Hispanic

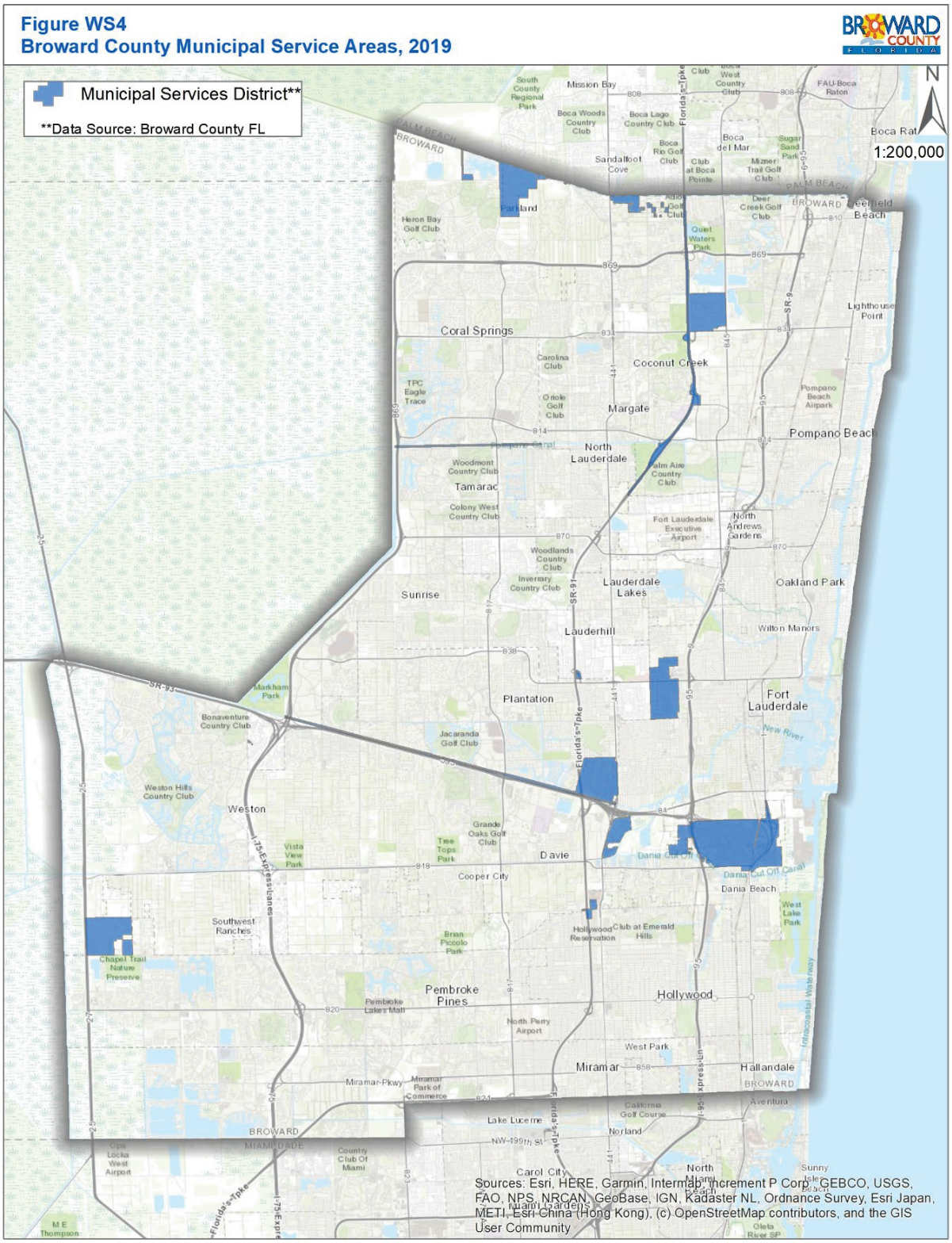

Figure WS4 Broward County Municipal Service Areas

Origin, for Florida and Its Counties, 2020-2045, With Estimates for 2015" to Broward County's 2017 Traffic analysis Zones (TAZ) and municipalities. The demographic forecast model update is detailed in, "Broward County and Municipal Population Forecast and Allocation Model (PFAM), 2017 (BCPDMD, 2017) based on the original PFAM developed in 2012 and updated in 2014.

This 2020 Work Plan includes analysis of existing water facilities, current and projected water demands versus water availability and the presentation of the water supply plan for the Fort Lauderdale water utility. Future water demands prepared for this analysis are compared to projected demands presented in the 2018 LECWSP Update, with discussion of any deviations.

BCPDMD is responsible for providing updated population forecasts throughout the County. The Broward County PFAM 2017 update was used to develop County population by jurisdiction. Updated population projections from University of Florida's BEBR Bulletin 178 and the Broward County PFAM 2017 update are summarized below in 5-year increments through 2040, Table WS5 below.

Table WS5 Broward County Population Projections 2020-2040

Year	BEBR Population Estimates [1]	BCPDMD Population Estimates [2]	SFWMD Population Estimates [3]
2020	1,914,498	1,894,285	1,931,057
2025	1,989,753	1,990,171	2,029,704
2030	2,052,432	2,051,056	2,109,543
2035	2,111,652	2,110,602	2,175,718
2040	2,158,080	2,156,835	2,232,397

1. BEBR Medium Populations from "Detailed Population Projections by Age, Sex, Race, and Hispanic Origin for Florida and its Counties 2020-2045, with Estimates for 2015, June 2016," 2016
2. BCPDMD Broward County and Municipal Population Forecast and Allocation Model, 2017
3. SFWMD, Lower East Coast Water Supply Plan, November 2018

The percent difference between the BEBR and the BCPDMD projections is no more than one percent. The percent difference between the BCPDMD and the SFWMD projections ranges between 2 and 3 percent from 2020 through 2040. The PFAM is structured using 953 TAZ within 31 municipalities in the County. The BEBR forecasts by age are converted to household using a weighted average of the households by age group data from the 2000 and 2010 Census. The household forecasts are then assigned to TAZ based on: (1) the change in household size distribution; (2) TAZ level distribution of households; and (3) the capacity of each TAZ to absorb additional housing units. BCPDMD also obtained input from the local planning and service delivery entities and referenced the Broward County Land Use Plan to estimated household distributions within TAZ and municipal boundaries (BCPDMD, 2017).

B. Current and Future Served Areas

The current and future served areas for BCWWS and the Cities of Fort Lauderdale and Hollywood are described in the sections below.

BCWWS

BCWWS is one of 25 utilities that provide potable water service within the urbanized area of the County. The utility was created on January 31, 1962, with the County's purchase of a small, investor-owned water and wastewater utility. Between 1962 and 1975, the County acquired several investor-owned systems. Under the County Code of Ordinances, the Broward County Board of County Commissioners exercises exclusive jurisdiction, control, and supervision of the utility system. BCWWS is the County organizational unit directly responsible for the utility.

The water utility delivers potable water to customers in service areas in north, mid, and south County and to one bulk water user. The water utility has grown to serve a population of approximately 239,000. The bulk water user, City of Coconut Creek, accounts for a population of approximately 56,000. Including the City of Coconut Creek, the utility serves about 12 percent of the County's total population. For the year 2017, treated water sold to retail customers equaled about 19 MGD on an annual average basis. Metered water sales to Coconut Creek equaled an additional 5 MGD. Notably, finished water production (treated water at point of delivery) has decreased in recent years. This may be attributable to a downturn in the economy, slowdown in population growth, and the County's water conservation efforts, including year-round irrigation conservation measures. Water conservation became increasingly important following a series of significant drought years, coupled with limitations to the County's traditional water source, and remains a critical initiative.

BCWWS also operates two regional wellfields that provide bulk raw Biscayne aquifer water to Deerfield Beach in north county and Dania Beach, Hallandale Beach, Hollywood and Florida Power and Light in south county through large user agreements.

BCWWS operates three service districts known as District 1, District 2, and District 3. These service districts are shown on Figure WS5 below and cover about 43 square miles. The three service districts are operated as independent entities, but are supported by BCWWS Operations as a single entity:

- District 1 service area contains all of Lauderdale Lakes and portions of the Cities of Fort Lauderdale, Lauderhill, North Lauderdale, Oakland Park, Plantation, Pompano Beach, and Tamarac;

- District 2 service area contains portions of the Cities of Deerfield Beach, Lighthouse Point, and Pompano Beach and provides water to portions of the City of Coconut Creek as described below; and
- District 3 service area contains portions of the Cities of Dania Beach, Davie, Fort Lauderdale, Miramar, West Park, Pembroke Park, Pembroke Pines, and Hollywood and provides water to the Fort Lauderdale-Hollywood International Airport.

All three service districts also include some small BMSD as highlighted on previously shown Figure WS4. Within these BMSD areas, some domestic self-supply (DSS) exists accounting for half of one present of the total County population. Based on the 2018 LEC Water Supply Plan Update, "All permanent residents outside of PWS [Public Water Supply] utility service area boundaries were considered DSS population." Current raw water usage for the estimated DSS population is approximately 1 MGD and is expected to decrease by 2040 to approximately 0.5 MGD (SFWMD, 2018). There are no immediate plans for BMSD neighborhoods like Hillsboro Ranches which consists of 23 single family homes on domestic self-supply to be provided potable water service by WWS.

BCWWS supplies water primarily to retail customers, but also provides water to the City of Coconut Creek under a bulk water resale agreement. Without prior approval from the County, the City is prohibited from buying or otherwise providing water within its service area from any source other than the County.

To plan and coordinate water supply utility activities within its three service areas, BCWWS uses utility analysis zones (UAZ) which divide service districts into smaller units by UAZ. Pulling TAZ information into UAZ involves allocating populations based on the split in residential units between the TAZ-UAZ subsections using the Broward County Property Appraiser parcel shapefile. The parcel shapefile permits the calculation of single-family and multi-family units within each TAZ-UAZ subsection.

A TAZ-UAZ subsection is a portion of a UAZ sits within a TAZ. The calculation method sums up the total residential units (single family and multi-family) within each TAZ-UAZ subsection. The population is allocated based on the percent of residential units in a TAZ-UAZ subsection out of the total TAZ dwelling units count. The projected BCWWS populations by district are shown in Table WS6 below and populations within Districts 1, 2, 3A and 3BC by municipality served are shown in Tables WS7, WS8, WS9 and WS10, respectively. are based on the results of an update to the AWS Conceptual Master Plan produced by Brown and Caldwell (Brown & Caldwell, 2019).

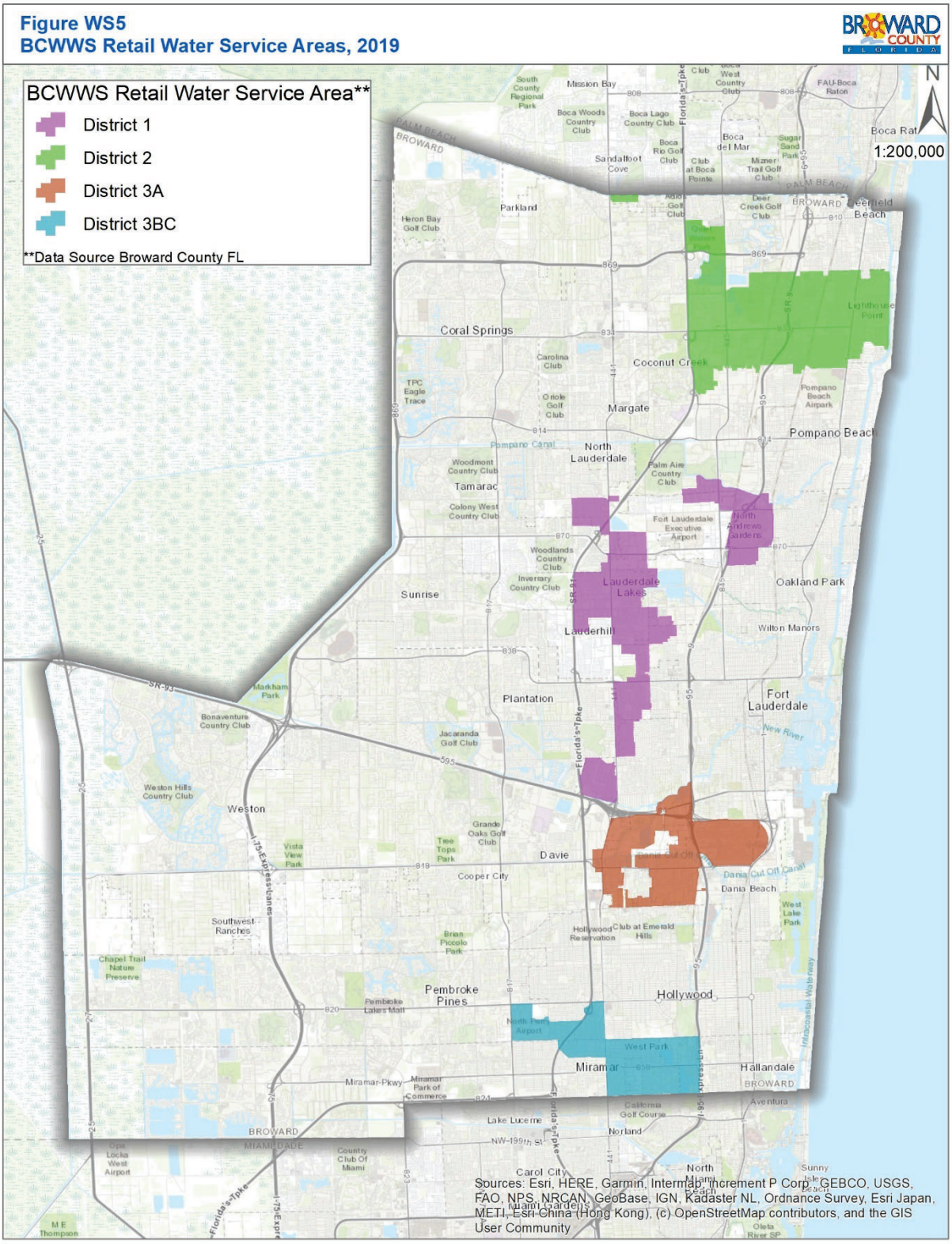

Figure WS5 BCWWS Retail Water Service Areas

Table WS6 BCWWS Service Area Population Projections 2015-2040[1]

BCWWS Service Area	2015	2020	2025	2030	2035	2040
District 1	75,931	78,718	84,292	89,479	92,895	95,299
District 2 Total	110,278	113,023	114,814	119,226	121,410	122,631
D2	55,052	54,510	55,702	57,779	58,493	58,672
Coconut Creek	55,226	58,513	59,112	61,447	62,917	63,959
District 3A	16,321	16,908	18,083	19,075	19,686	20,109
District 3BC	36,263	37,486	38,889	41,146	42,639	43,625
BCWWS Total	238,793	246,135	256,078	267,859	276,630	281,278

1. Based on 2017 BCPDMD TAZ estimate translation to UAZ populations performed by Brown and Caldwell for BCWWS, 2019

Table WS7 District 1 - Population Projection by Municipality [1]

Municipality	2015	2020	2025	2030	2035	2040	2045
DISTRICT 1 TOTAL	75,931	78,718	84,292	89,479	92,895	95,299	97,665
FORT LAUDERDALE	7,306	7,856	8,830	9,311	9,670	9,962	10,293
LAUDERHILL	8,376	8,237	9,116	10,714	11,664	12,411	13,180
LAUDERDALE LAKES	31,928	32,479	33,305	35,327	36,650	37,554	38,398
NORTH LAUDERDALE	6,844	6,719	8,213	8,236	8,358	8,350	8,325
OAKLAND PARK	12,113	13,109	12,914	13,374	13,545	13,639	13,680
POMPANO BEACH	521	561	586	632	660	682	705
PLANTATION	184	263	591	803	973	1,133	1,315
TAMARAC	1,423	2,382	2,444	2,508	2,604	2,662	2,709
BMSD	7,236	7,112	8,293	8,574	8,771	8,906	9,060

1. Based on 2017 BCPDMD TAZ estimate translation to UAZ populations performed by Brown and Caldwell for BCWWS, 2019

Table WS8 District 2 - Population Projection by Municipality [1]

Municipality	2015	2020	2025	2030	2035	2040	2045
DISTRICT 2 TOTAL	55,052	54,510	55,702	57,779	58,493	58,672	58,677
COCONUT CREEK	66	65	65	66	66	65	64
DEERFIELD BEACH	22,823	22,467	23,085	24,193	24,617	24,820	24,925
LIGHTHOUSE POINT	8,970	8,871	8,743	8,908	8,969	8,981	8,956
POMPANO BEACH	23,193	23,107	23,809	24,612	24,841	24,806	24,732

1. Based on 2017 BCPDMD TAZ estimate translation to UAZ populations performed by Brown and Caldwell for BCWWS, 2019

Table WS9 District 3A - Population Projection by Municipality [1]

Municipality	2015	2020	2025	2030	2035	2040	2045
DISTRICT 3A TOTAL	16,321	16,908	18,083	19,075	19,686	20,109	20,504
DANIA BEACH	15,307	15,888	16,808	17,379	17,680	17,824	17,950
DAVIE	60	60	325	538	710	874	1,033
FORT LAUDERDALE	721	713	705	906	1,044	1,161	1,271
HOLLYWOOD	233	247	245	252	252	250	250

1. Based on 2017 BCPDMD TAZ estimate translation to UAZ populations performed by Brown and Caldwell for BCWWS, 2019

Table WS10 District 3BC - Population Projection by Municipality [1]

Municipality	2015	2020	2025	2030	2035	2040	2045
DISTRICT 3ABC TOTAL	52,584	54,394	56,972	60,221	62,325	63,734	65,235
DANIA BEACH	15,307	15,888	16,808	17,379	17,680	17,824	17,950
DAVIE	60	60	325	538	710	874	1,033
FORT LAUDERDALE	721	713	705	906	1,044	1,161	1,271
HOLLYWOOD	4,698	4,922	5,266	5,603	5,840	6,036	6,250
MIRAMAR	6,615	6,623	7,359	8,291	8,858	9,310	9,832
PEMBROKE PINES	4,040	4,384	4,334	4,294	4,417	4,477	4,520
PEMBROKE PARK	6,940	6,922	6,792	7,127	7,292	7,355	7,412
WEST PARK	14,203	14,882	15,383	16,083	16,484	16,697	16,967

1. Based on 2017 BCPDMD TAZ estimate translation to UAZ populations performed by Brown and Caldwell for BCWWS, 2019

City of Fort Lauderdale

Broward County works closely with the City of Fort Lauderdale through involvement in the County Commission's Water Advisory Board and its Technical Advisory Committee, Southeast Florida Utility Council, Broward Water Partnership and other area technical and policy groups. The City's populations were obtained from the City's DRAFT Water Supply Facility Work Plan 2020 Update. The municipal utility owned and operated by the City of Fort Lauderdale is one of the largest purveyors of potable water in Broward County in terms of total water delivery, providing service to approximately 240,000 customers in 2017. The utility's service area, shown in Figure WS6, encompasses a total area of 43 square miles, approximately one-tenth the total area of urban Broward County. Customers include residential, commercial and industrial properties within the Cities of Fort Lauderdale, Lauderdale Lakes, North Lauderdale, Oakland Park, and Wilton Manors; portions of BMSD and the Cities of Tamarac, and Lauderhill; Port Everglades; Towns of Lauderdale-By-The-Sea and Davie; and Villages of Lazy Lake and Sea Ranch Lakes. Emergency potable water interconnections are maintained with the Cities of Dania Beach, Pompano Beach, and

Plantation and BCWWS service area. The population of Fort Lauderdale and the other municipalities in the water service area was forecasted based on 2017 BCPDMD TAZ estimate translation to UAZ populations performed by EPCRD using 2018 SFWMD LECWSP Service Area Boundaries. The City of Fort Lauderdale Utility Service Area population projections for 2015-2040 are shown in Table WS11 and were obtained from the City's Draft Water Supply Facilities Work Plan Update for 2020.

Table WS11 City of Fort Lauderdale Utility Service Area Population by Jurisdiction, Actual 2015 and Forecasted 2020 to 2040

Jurisdiction	2015	2020	2025	2030	2035	2040
TOTAL	235,840	241,454	274,470	292,768	304,918	315,109
Fort Lauderdale	175,228	179,997	208,747	222,915	232,419	240,134
Lauderdale by The Sea	4,147	3,689	3,996	3,940	3,890	3,850
Sea Ranch Lakes	700	693	680	715	734	746
BMSD	6,457	7,060	7,854	8,561	8,854	9,486
Davie	529	526	700	821	919	1,016
Lauderdale Lakes	381	383	378	386	386	390
Lauderhill	2,917	2,862	3,085	3,306	3,450	3,571
Lazy Lake	26	25	27	29	30	31
North Lauderdale	358	352	1,145	1,145	1,133	1,123
Oakland Park	31,111	31,852	32,719	34,693	36,114	37,145
Tamarac	2,054	2,037	2,007	2,032	2,054	2,041
Wilton Manors	11,932	11,878	13,132	14,225	14,935	15,576
Port Everglades	Population is included in BMSD					

Source: City of Fort Lauderdale Draft Water Supply Facilities Work Plan Update for 2020 - Based on BEBR data.

City of Hollywood

Broward County works closely with the City of Fort Lauderdale through involvement in the County Commission's Water Advisory Board and its Technical Advisory Committee, Southeast Florida Utility Council, Broward Water Partnership and other area technical and policy groups. The City's populations were obtained from the City's DRAFT Water Supply Facility Work Plan 2020 Update. The City of Hollywood's service area includes population projection of approximately 230,000 in year 2040, Table WS12 below. Through the bulk sales agreements with BCWWS, the City of Hollywood provides treated water to BCWWS

to serve its southernmost service areas (District 3A, 3B/C). The City of Hollywood utility service area include the Cities of Hollywood and West Park, portions of the City of Dania Beach, Town of Davie, City of Fort Lauderdale, and Seminole Tribe of Florida Hollywood Reservation. No population breakdown by municipality was available when this plan was written.

Table WS12 City of Hollywood Utility Service Area Population Projections 2015-2040

Service Area	2015	2020	2025	2030	2035	2040
TOTAL Hollywood	194,411	200,574	207,352	216,861	223,595	228,166
City of Hollywood Retail	141,827	146,180	150,380	156,640	161,270	164,432
BCWWS District 3A Wholesale	16,321	16,908	18,083	19,075	19,686	20,109
BCWWS District 3B/C Wholesale	36,263	37,486	38,889	41,146	42,639	43,625

Source: City of Hollywood 2015 Water Supply Plan Potable Water Sub-Element, January 2015. Table 2-3 and Broward County Water Supply Facilities Work Plan 2020.

C. Potable Water Level of Service Standard

The potable water level of service standards for BCWWS and the Cities of Fort Lauderdale and Hollywood are detailed in the sections below.

BCWWS

BCWWS has the responsibility to determine if it can adequately serve existing and potential customers. To that end, BCWWS has set a potable water level of service in gallons per person per day or gallons per capita day (gpcd) to a maximum of 150 gpcd. Table WS13 summarizes the five-year average (2013-2017) gallons per capita day for each WWS utility service area that is used to project water use into the future. Annually calculated values of gallons per capita day will fluctuate based on environmental, socioeconomical, physical, operational and other service area characteristics or changes.

The following is the current available information.

Table WS13 BCWWS Retail Potable Water Level of Service Standards [1]

District of BCWWS	Finished Water Level of Service (gpcd)
District 1	96
District 2	112
District 3A and 3BC	127

1. Based on demand development in Section D - Water Supply Provided by Local Governments of this plan.

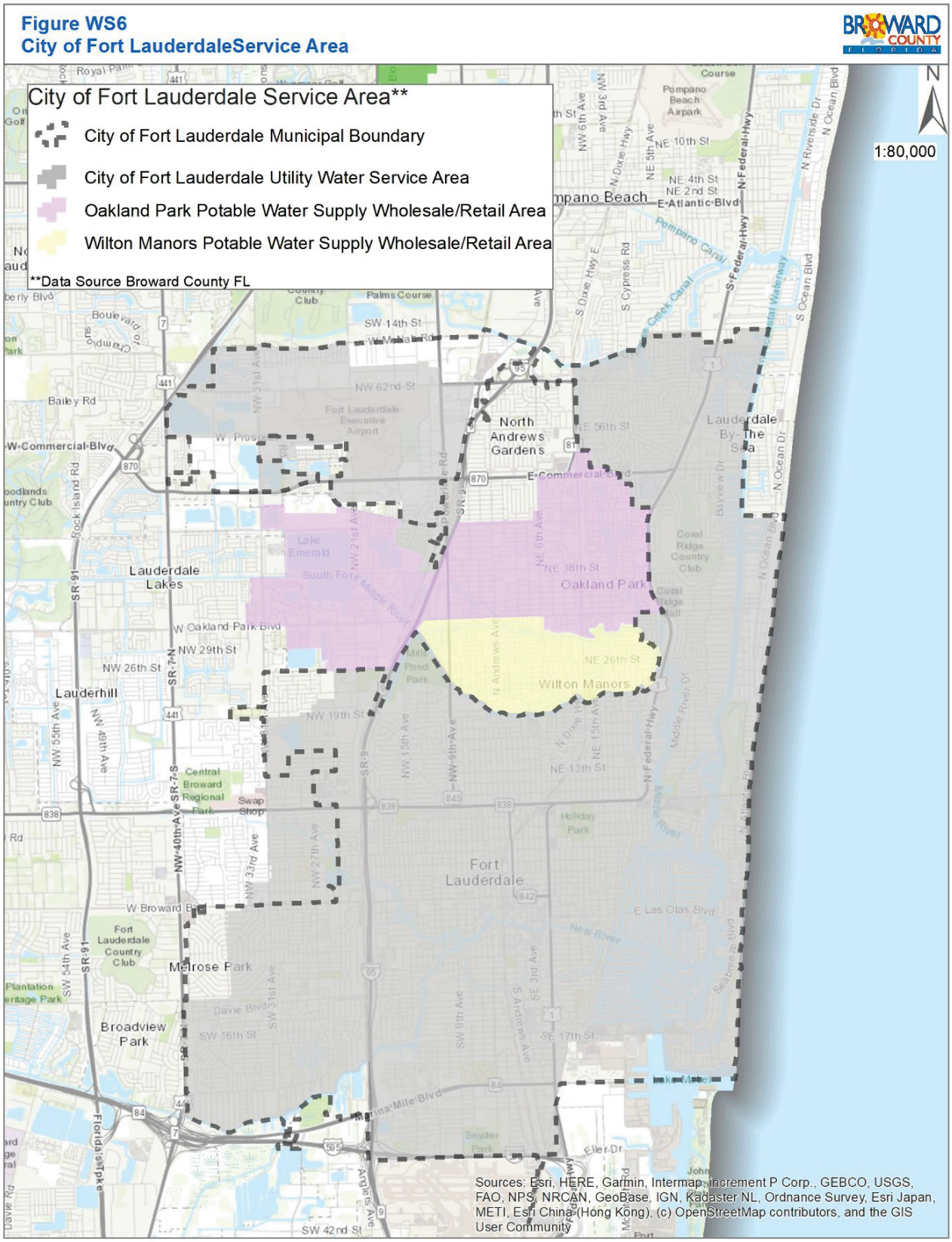

Figure WS6 City of Fort Lauderdale Service Area

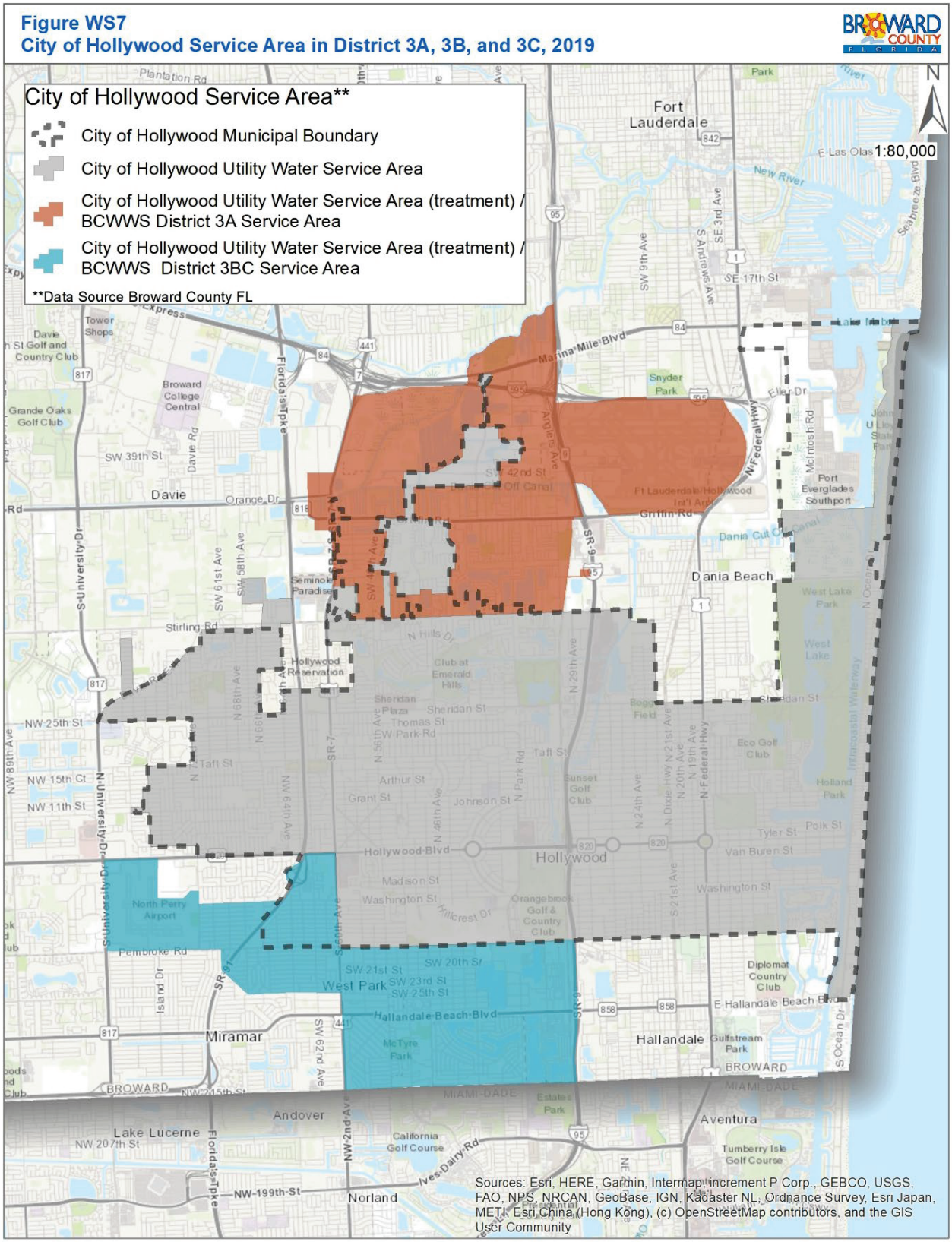

Figure WS7 City of Hollywood Service Area in District 3A, 3B, and 3C

City of Fort Lauderdale

The City of Fort Lauderdale has the responsibility to determine if it can adequately serve existing and potential customers. To that end, Fort Lauderdale has adopted their level of service for finished water at 170 gallons per day finished water per person (SFWMD LECWSP, 2018). In 2016, the average day demand throughout their service area was 41.4 MGD. The finished water per capita demand averaged 173 gallons per person per day from 2013 to 2016.

City of Hollywood

The City of Hollywood has the responsibility to determine if it can adequately serve the existing and potential customers within their service areas. To that end, Hollywood has adopted a level of service of 116 gallons per day finished water per person (2016). In 2016, the average day demand throughout their service area was 22.79 MGD. The finished water per capita demand averaged 113 gallons per person per day from 2013 to 2016.

D. Water Supply Provided by Local Governments

Water supply provided by local governments is summarized in the sections below.

BCWWS District 1

District 1 has a combined service area of 11.9 square miles with 248 miles of water distribution and transmission mains. BCWWS maintains water system interconnections with the City of Fort Lauderdale, the City of Tamarac, the City of Plantation, and the City of Lauderhill to provide for emergency water supply. In District 1, raw water is treated at the District 1 WTP located in the City of Lauderdale Lakes prior to distribution to retail customers. The plant was expanded in 1994 to its current capacity of 16.0 MGD to treat Biscayne Aquifer raw water using lime softening treatment. Figure WS8 shows the location of the District 1 WTP, storage tanks, and finished water distribution pipe 12-inches and larger within the District 1 service area.

The District 1 wellfield is in the area surrounding the WTP and is comprised of nine Biscayne Aquifer wells, all of which are currently in service. The total design capacity of the wellfield is approximately 23.5 MGD. Two Floridan Aquifer test wells were completed in 2014; one well is located on the WTP site and one is in an easement northeast of the WTP. Test results from the Floridan well construction revealed that upper Floridan Aquifer production zone chloride concentrations are approximately 4,000 mg/L and total dissolved solids concentrations are 7,500 mg/L (MWH, 2013). Based on the water quality test results, water produced from the

well will likely require high pressure RO treatment. Currently, BCWWS has no plans to build a RO WTP at the District 1 site nor to convert the Floridan test wells to production wells.

BCWWS was issued a SFWMD CUP (No. 06-00146-W) in April 2008 for a 20-year permit duration to withdraw water from the Biscayne Aquifer and Floridan Aquifer. The permit allocates an annual withdrawal from the Biscayne Aquifer of 3,664 million gallons (MG) with a maximum month of 333 MG and an annual withdrawal from the Floridan Aquifer of 1,410 MG with a maximum month of 128 MG. Water use demand projections are presented in Table WS14 below for finished water and Table WS15 for raw water through year 2040. Finished water projections are also shown by municipality within the District 1 service area. Municipal demand projections were estimated based on the actual 2015 use and the 5-year historic gallons per capita day of 96 gpcd was applied to 2020 through 2040 populations to calculate demand. Demand estimates are shown in Table WS16 below. The projected raw water use accounts for 56 percent of the WTP capacity in year 2040.

Table WS14 District 1 Actual and Projected Finished Water Demands

Planning Year	Population (UAZ Estimate)	Finished Water Demands		
		Annual (MG)	Average Day (MGD)	Per Capita Use
Actual Water Use [1]				
2010	75,091	2,596	7.11	95
2011	75,259	2,677	7.33	97
2012	75,427	2,669	7.31	97
2013	75,595	2,606	7.14	94
2014	75,763	2,617	7.17	95
2015	75,931	2,740	7.51	99
2016	76,488	2,681	7.35	96
2017	77,046	2,686	7.36	96
Projected Water Use [2]				
2020	78,718	2,755	7.55	96
2025	84,292	2,950	8.08	96
2030	89,479	3,132	8.58	96
2035	92,895	3,252	8.91	96
2040	95,299	3,336	9.14	96

1. BCWWS Monthly Operating Reports for Water Treatment Plant Finished Water Flow
2. Projected Water Use based on Finished Water Per Capita (5-Year Average) of 96 gallons per capita day

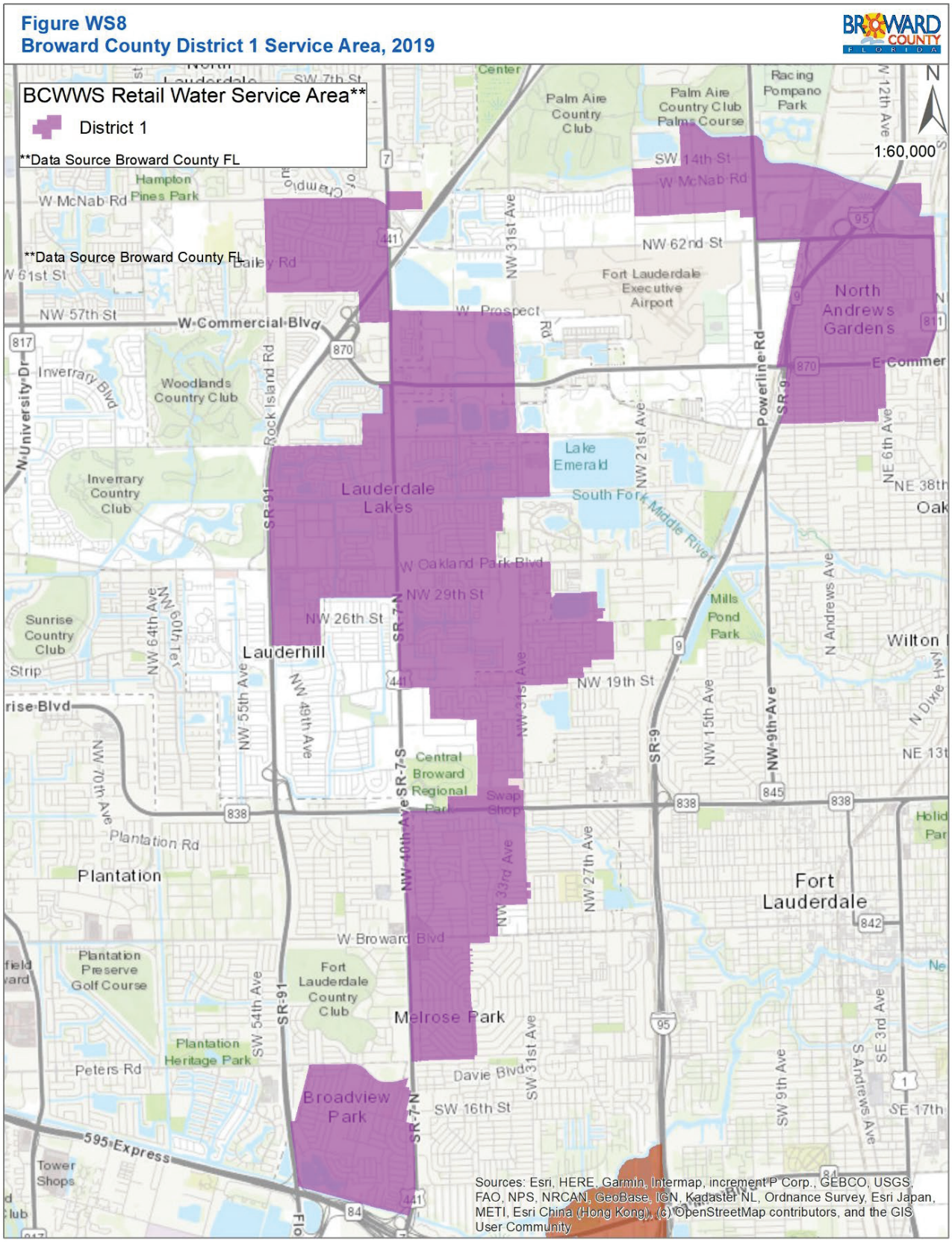

Figure WS8 BCWWS District 1 Service Area

Table WS15 District 1 Actual and Projected Raw Water Demands

Planning Year	Finished Water Annual Demand (MG)	Raw Water Demands			
		Raw : Finished Ratio	Annual (MG)	Average Day (MGD)	Maximum Month (MGM)
Actual Water Use [1]					
2010	2,596	1.08	2,794	7.65	247
2011	2,677	1.13	3,023	8.28	273
2012	2,669	1.10	2,946	8.07	258
2013	2,606	1.09	2,843	7.79	260
2014	2,617	1.06	2,763	7.57	246
2015	2,740	1.05	2,886	7.91	267
2016	2,681	1.06	2,849	7.81	253
2017	2,686	1.05	2,809	7.70	257
Projected Water Use [2, 3]					
2020	2,755	1.05	2,904	7.96	263
2025	2,950	1.05	3,110	8.52	282
2030	3,132	1.05	3,301	9.04	299
2035	3,252	1.05	3,427	9.39	311
2040	3,336	1.05	3,516	9.63	319

1. BCWWS Monthly Operating Reports for Individual Well Pumpages
2. Projected Raw Water based on Actual Raw Water to Finished Water Ratio (3-Year Average) of 1.05
3. Projected Maximum Month based on Actual Maximum Month to Average Day Ratio (5-Year Average) of 33.07

Table WS16 Projected Average Day Finished Water by Municipality within District 1 in MGD [1]

Municipality	2015 [2]	2020	2025	2030	2035	2040
FORT LAUDERDALE	0.72	0.75	0.85	0.89	0.93	0.96
LAUDERHILL	0.83	0.79	0.88	1.03	1.12	1.19
LAUDERDALE LAKES	3.16	3.12	3.20	3.39	3.52	3.61
NORTH LAUDERDALE	0.68	0.65	0.79	0.79	0.80	0.80
OAKLAND PARK	1.20	1.26	1.24	1.28	1.30	1.31
POMPANO BEACH	0.05	0.05	0.06	0.06	0.06	0.07
PLANTATION	0.02	0.03	0.06	0.08	0.09	0.11
TAMARAC	0.14	0.23	0.23	0.24	0.25	0.26
BMSD	0.72	0.68	0.80	0.82	0.84	0.85

1. Calculated using District 1 Finished Water 5-Year Average Gallons Per Capita Day of 96 gpcd2. 2015 demand Calculated using District 1 Finished Water Actual Gallons Per Capita Day of 99 gpcd

BCWWS District 2

District 2 has a service area of 14.8 square miles and contains 253 miles of water distribution and transmission mains. The facilities of District 2 are interconnected with the City of Deerfield Beach, the Town of Hillsboro Beach, the City of Pompano Beach, and Palm Beach County to provide for emergency water supply. In District 2, raw water is treated at the District 2 WTP located in the City of Pompano Beach prior to distribution to BCWWS retail customers and the City of Coconut Creek. The District 2 WTP was expanded in 1994 to its current capacity of 30.0 MGD to treat Biscayne Aquifer raw water using lime softening treatment. Figure WS9 shows the location of the District 2 WTP, storage tanks, and finished water distribution pipe 12-inches and larger with the District 2 service area.

The District 2 WTP treats raw water supplied by the District 2 and the North Regional Wellfields under SFWMD CUP No. 06-01634-W issued in March 2008 for a 20-year permit duration to withdraw water from the Biscayne and Floridan Aquifers. The District 2 wellfield has a design capacity of 27.1 MGD and is comprised of seven production wells. The North Regional wellfield has a design capacity of 20.2 MGD and is comprised of 10 production wells. The District 2 and North Regional Wellfields each provide approximately 50 percent of the raw water demand. While Floridan Aquifer production wells were planned as part of the original permit to provide AWS, no wells have been constructed to date. The permit allocates an annual withdrawal from the Biscayne Aquifer of 6,388 million gallons (MG) with a maximum month of 585 MG and an annual withdrawal from the Floridan Aquifer of 1,664 MG with a maximum month of 152 MG. Water use demand projections are presented in Table WS17 for finished water and Table WS18 for raw water through year 2040. Finished water projections are also shown by municipality within the District 2 service area. Municipal demand projections were estimated based on the actual 2015 use and the 5-year historic gallons per capita day of 112 gpcd was applied to 2020 through 2040 populations to calculate demand. Demand estimates are shown in Table WS19 below. The projected raw water use accounts for approximately 49 percent of the WTP capacity in year 2040.

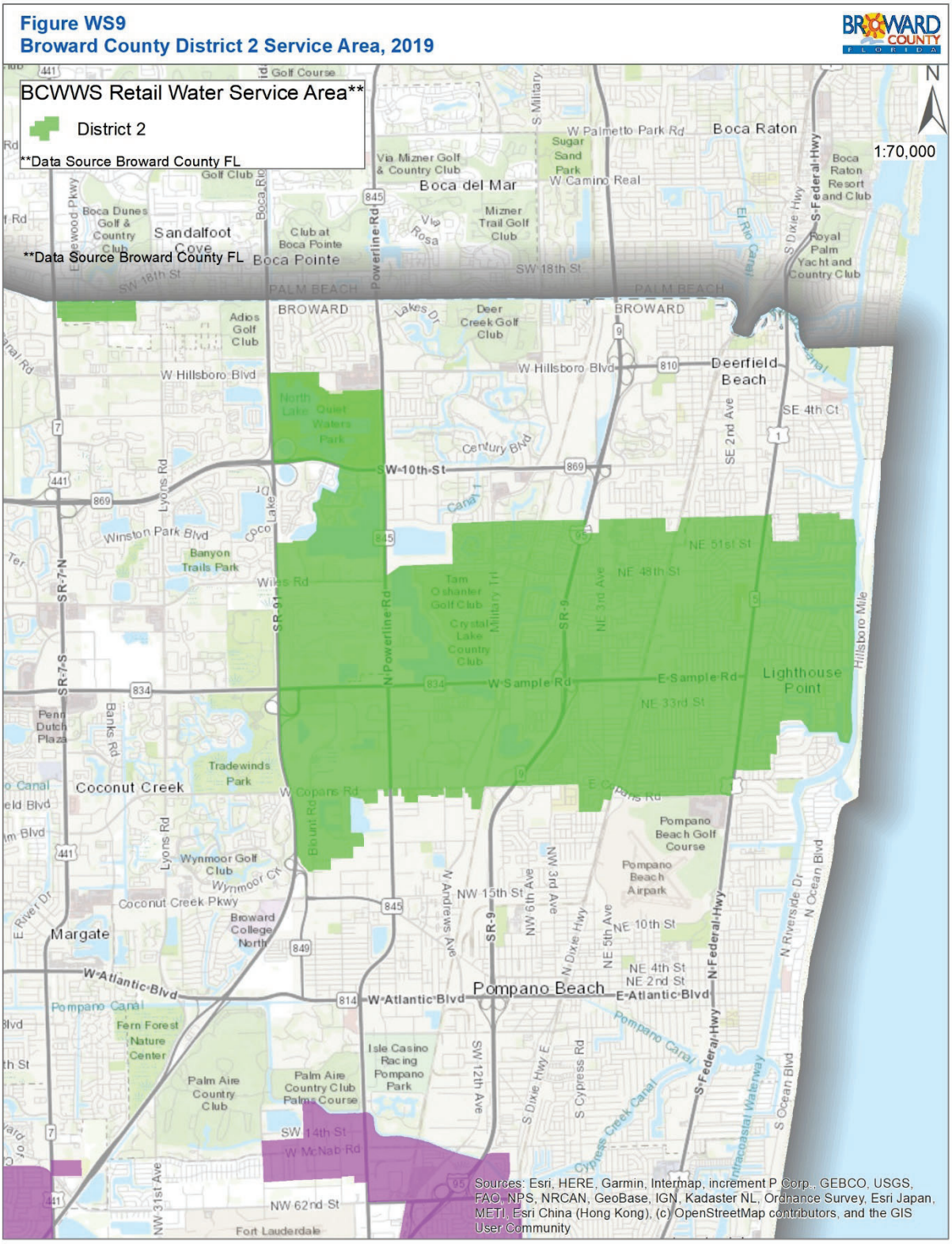

Figure WS9 BCWWS District 2 Service Area

Table WS17 District 2 Actual and Projected Finished Water Demands

Planning Year	Population (UAZ Estimate)	Finished Water Demands		
		Annual (MG)	Average Day (MGD)	Per Capita Use
Actual Water Use [1]				
2010	109,181	4,560	12.49	114
2011	109,400	4,496	12.32	113
2012	109,620	4,326	11.85	108
2013	109,839	4,496	12.32	112
2014	110,059	4,322	11.84	108
2015	110,278	4,599	12.60	114
2016	110,827	4,554	12.48	113
2017	111,376	4,661	12.77	115
Projected Water Use [2]				
2020	113,023	4,630	12.69	112
2025	114,814	4,704	12.89	112
2030	119,226	4,885	13.38	112
2035	121,410	4,974	13.63	112
2040	122,631	5,024	13.76	112

1. BCWWS Monthly Operating Reports for Water Treatment Plant Finished Water Flow
2. Projected Water Use based on Finished Water Per Capita (5-Year Average) of 112 gallons per capita day

Table WS18 District 2 Actual and Projected Raw Water Demands

Planning Year	Finished Water Annual Demand (MG)	Raw Water Demands			
		Raw: Finished Ratio	Annual (MG)	Average Day (MGD)	Maximum Month (MGM)
Actual Water Use [1]					
2010	4,560	1.08	4,942	13.54	440
2011	4,496	1.04	4,689	12.85	418
2012	4,326	1.04	4,488	12.30	415
2013	4,496	1.03	4,629	12.68	415
2014	4,322	1.05	4,520	12.38	413
2015	4,599	1.04	4,793	13.13	432
2016	4,554	1.03	4,709	12.90	423
2017	4,661	1.04	4,833	13.24	434
Projected Water Use [2, 3]					
2020	4,630	1.04	4,880	13.37	442
2025	4,704	1.04	4,957	13.58	449
2030	4,885	1.04	5,148	14.10	466
2035	4,974	1.04	5,242	14.36	475
2040	5,024	1.04	5,295	14.51	480

1. BCWWS Monthly Operating Reports for Individual Well Pumpages inclusive of the Deerfield Beach Raw Water Large User
2. Projected Raw Water based on Actual Raw Water to Finished Water Ratio (3-Year Average) of 1.04
3. Projected Maximum Month based on Actual Maximum Month to Average Day Ratio (5-Year Average) of 32.90

Table WS19 Projected Average Day Finished Water by Municipality within District 2 in MGD [1]

Municipality	2015 [2]	2020	2025	2030	2035	2040
COCONUT CREEK	0.01	0.01	0.01	0.01	0.01	0.01
DEERFIELD BEACH	2.60	2.52	2.59	2.71	2.76	2.78
LIGHTHOUSE POINT	1.02	0.99	0.98	1.00	1.00	1.01
POMPANO BEACH	2.64	2.59	2.67	2.76	2.78	2.78

1. Calculated using District 2 Finished Water 5-Year Average Gallons Per Capita Day of 112 gpcd
2. 2015 demand Calculated using District 2 Finished Water Actual Gallons Per Capita Day of 114 gpcd

BCWWS District 3A and 3BC:

District 3 service area is divided into two geographically separate subdistricts 3A, Figure WS10, and 3BC, Figure WS11. The County purchases bulk treated water primarily from the City of Hollywood and distributes the treated water through the County's distribution system. District 3 has a combined service area of approximately 14.3 square miles and contains 223 miles of transmission and distribution mains. Subdistrict 3A is contains the Fort Lauderdale-Hollywood International Airport which is approximately 20 percent of the total area of the district. District 3A has interconnects with the City of Hollywood, for is primary water supply, and with the City of Fort Lauderdale and the City of Dania Beach, to provide for emergency water supply. Subdistrict 3BC has interconnects with the City of Hollywood for its primary water supply, and the Cities of Pembroke Pines and Miramar to provide for emergency water supply.

The City of Hollywood is responsible for ensuring adequate raw water supply and treatment facilities to serve the County District 3 service areas. The City's existing CUP (Permit No. 06-00038-W) was issued by the SFWMD on April 9, 2008 and expires April 9, 2028. The Hollywood CUP raw water allocation for the subdistrict 3A/3BC areas is 13.16 MGD to meet demands through the year 2028.

BCWWS' current finished water demand for District 3 averages around 6.4 MGD and is projected to increase to 8.3 MGD by 2040 as shown Table WS20 below. District 3's raw water demand is anticipated to be around 9.0 MGD in 2045 as shown in Table WS21, based on historical raw to finished water ratio of 1.09. BCWWS continues to coordinate closely with the City to ensure that future demands for District 3 are adequately addressed.

Finished water demand was estimated as shown in Table WS22 (District 3A) and WS23(District 3BC) by using the finished water 5-year historical gallons per capita day of 127 and the municipal populations for District 3A and District 3BC. Year 2015 was calculated using the actual gallons per capita day of 130.

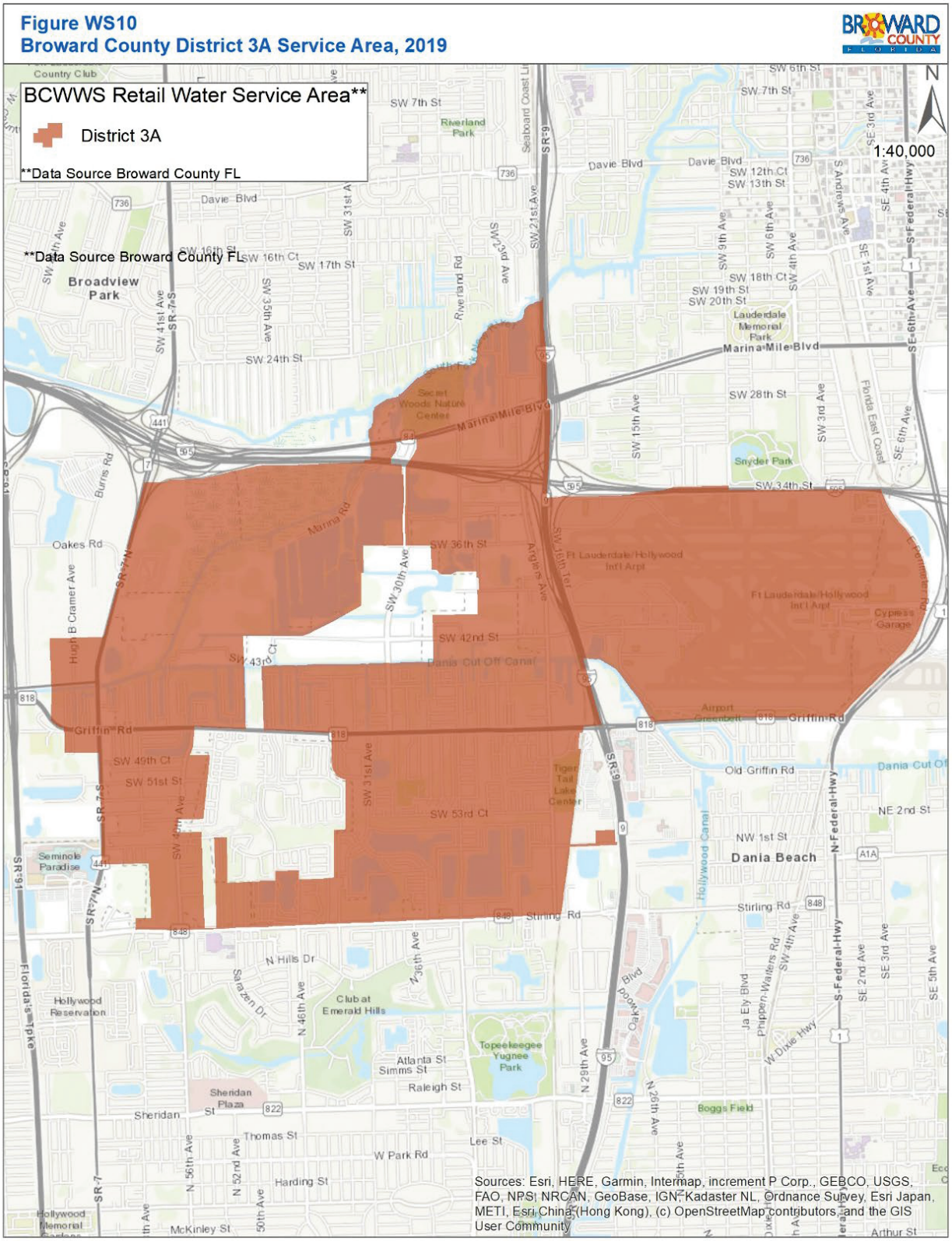

Figure WS10 BCWWS District 3A Service Area

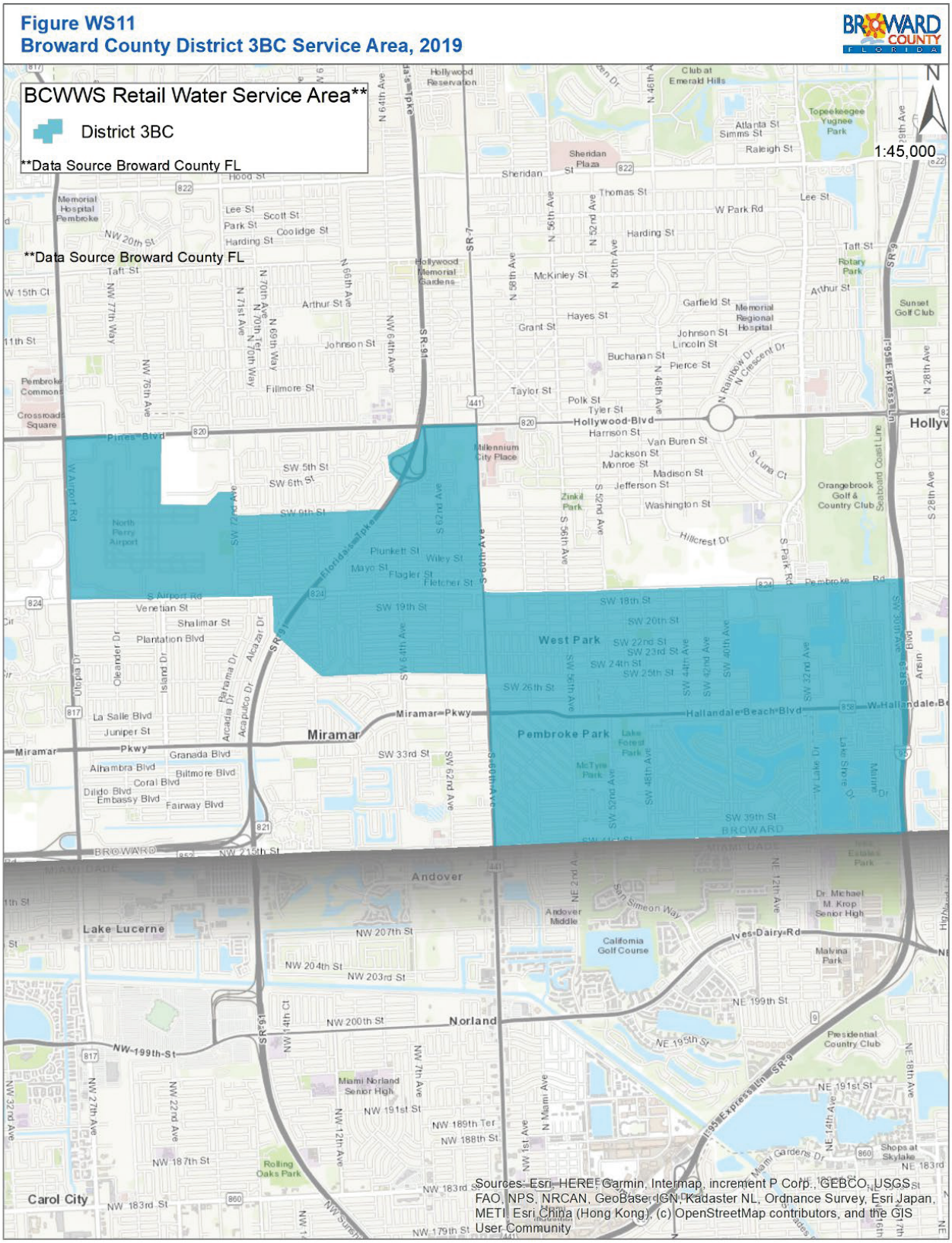

Figure WS11 BCWWS District 3BC Service Area

Table WS20 District 3A and 3BC Actual and Projected Finished Water Demands

Planning Year	Population (UAZ Estimate)	Finished Water Demands				
		Annual (MG)	Average Day (MGD)	Per Capita Use	Maximum Month (MGM)	Max Mo : Avg Day Ratio
Actual Water Use [1]						
2010	32,480	2,080	5.70	118	192	33.74
2011	49,158	2,210	6.05	126	196	32.42
2012	50,014	2,230	6.11	122	200	32.79
2013	50,871	2,362	6.47	127	204	31.59
2014	51,727	2,369	6.49	125	221	33.99
2015	52,584	2,490	6.82	130	222	32.51
2016	52,946	2,491	6.82	129	218	31.97
2017	53,308	2,383	6.52	122	212	32.48
Projected Water Use [2, 3]						
2020	54,394	2,523	6.91	127	244	32.51
2025	56,972	2,642	7.24	127	256	32.51
2030	60,221	2,793	7.65	127	270	32.51
2035	62,325	2,891	7.92	127	280	32.51
2040	63,734	2,956	8.09	127	286	32.51

1. BCWWS Monthly Operating Reports for 3A, 3B and 3C Finished Water Meters
2. Projected Water Use based on Finished Water Per Capita (5-Year Average) of 127 gallons per capita day
3. Projected Finished Water Maximum Month based on Actual Finished Maximum Month to Average Day Ratio (5-Year Average) of 32.51

Table WS21 District 3A and 3BC Actual and Projected Raw Water Demands

Planning Year	Finished Water Annual Demand (MG)	Raw Water Demands			
		Raw: Finished Ratio	Annual (MG)	Average Day (MGD)	Maximum Month (MGM)
Actual Water Use [1]					
2010	2,080	1.09	2,267	6.21	210
2011	2,210	1.09	2,409	6.60	214
2012	2,230	1.09	2,431	6.66	218
2013	2,362	1.09	2,575	7.05	223
2014	2,369	1.09	2,582	7.07	240
2015	2,490	1.09	2,714	7.44	242
2016	2,491	1.09	2,715	7.44	238
2017	2,383	1.09	2,599	7.12	231
Projected Water Use [2, 3]					
2020	2,523	1.09	2,743	7.52	244
2025	2,642	1.09	2,873	7.87	256
2030	2,793	1.09	3,037	8.32	270
2035	2,891	1.09	3,143	8.61	280
2040	2,956	1.09	3,214	8.81	286

1. BCWWS Monthly Operating Reports for 3A, 3B and 3C Finished Water Meters
2. Projected Raw Water based on SFWMD LECWSP 2018 Update, Appendix B, Table B-4 entry for Hollywood of 1.09
3. Actual and Projected Raw Water Maximum Month based on Actual Finished Maximum Month to Average Day Ratio (5-Year Average) of 32.51

Table WS22 Projected Average Day Finished Water by Municipality within District 3A in MGD [1]

Municipality	2015 [2]	2020	2025	2030	2035	2040
DISTRICT 3A TOTAL	2.12	2.15	2.30	2.42	2.50	2.55
DANIA BEACH	1.99	2.02	2.13	2.21	2.25	2.26
DAVIE	0.01	0.01	0.04	0.07	0.09	0.11
FORT LAUDERDALE	0.09	0.09	0.09	0.12	0.13	0.15
HOLLYWOOD	0.03	0.03	0.03	0.03	0.03	0.03

1. Calculated using District 1 Finished Water 5-Year Average Gallons Per Capita Day of 127 gpcd
2. 2015 demand Calculated using District 1 Finished Water Actual Gallons Per Capita Day of 130 gpcd

Table WS23 Projected Average Day Finished Water by Municipality within District 3BC in MGD [1]

Municipality	2015 [2]	2020	2025	2030	2035	2040
DISTRICT 3BC TOTAL	4.71	4.76	4.94	5.23	5.42	5.54
HOLLYWOOD	0.58	0.59	0.64	0.68	0.71	0.73
MIRAMAR	0.86	0.84	0.93	1.05	1.12	1.18
PEMBROKE PINES	0.53	0.56	0.55	0.55	0.56	0.57
PEMBROKE PARK	0.90	0.88	0.86	0.91	0.93	0.93
WEST PARK	1.85	1.89	1.95	2.04	2.09	2.12

1. Calculated using District 1 Finished Water 5-Year Average Gallons Per Capita Day of 127 gpcd
2. 2015 demand Calculated using District 1 Finished Water Actual Gallons Per Capita Day of 130 gpcd

South System Regional Wellfield (SRW):

BCWWS operates the SRW located in Cooper City, west of Pine Island Road, just north of Sheridan Street. The SRW supplies Biscayne Aquifer raw water from eight production wells to the Cities of Dania Beach, Hollywood, and Hallandale Beach and to the Florida Power and Light (FPL) Dania Beach Energy Center under large user agreements. The SRW CUP (06-01474-W) issued March 2018, and successfully modified July 10, 2019, reflects the complexities of providing regional raw water. The CUP allocation is divided into three portions that have individual expiration dates as shown in Table WS24 and Table WS25 details the individual large user allocation limitations.

Table WS24 SRW CUP Allocation Summary

Limitation	Duration	Average Day (MGD)	Maximum Month (MGM)
Temporary 5-Year Allocation	March 2018 to March 2023	15.64	533.17
Base Condition Allocation [1]	March 2023 to March 2038	11.62	396.13
TOTAL C-51 Offset Allocations [2]	March 2023-December 2065	5.00	170.33
TOTAL SR Wellfield Allocation	March 2023-December 2065 [2]	16.62	566.19

1. The Base Condition Allocation must be renewed every 20 years.
2. Broward County purchased 3.0 MGD of C-51 Reservoir Project storage to provide for demands in the BCWWS 3A/3BC service area through December 2065. The City of Dania Beach and the City of Hallandale Beach have purchased 1 MGD each of C-51 Reservoir Project storage to meet their projected demand with supply from SR Wellfield. Table WS16 summarizes the SRW raw water demands through 2040.

Table WS25 SRW Raw Water Large User Average Day Projections

Limitations	Dania Beach (MGD)	Hallandale Beach (MGD)	Hollywood-BCWWS 3A/3BC (MGD)	FPL (MGD)	TOTAL Allocation (MGD)
Temporary 5-Year Allocation (March 2018 - March 2023)	3.02	3.61	7.27	1.74	15.64
Base Condition Allocation [1] (March 2018 - March 2038)	1.58	3.26	5.78	1.00	11.62
C-51 Offset Allocations [2] (March 2023 - December 2065)	1.00	1.00	3.00	---	5.00
TOTAL SR Wellfield Allocation	2.58	4.26	8.78	1.00	16.62
C-51 Reservoir Project Allotments Under Agreements	1.00	1.00	3.00	---	5.00

1. Renewal of the Base Condition Allocation of 11.62 MGD is required every 20 years.
2. Broward County purchased 3.0 MGD of C-51 Reservoir Project storage to provide for demands in the BCWWS 3A/3BC service area through December 2065. The City of Dania Beach and City of Hallandale Beach have purchased 1 MGD each of C-51 Reservoir Project storage to meet their projected demand with supply from SR Wellfield.

City of Fort Lauderdale

Data indicate that City of Fort Lauderdale demands may exceed their Biscayne Aquifer supply in year 2035. The City's Water Supply Facility Work Plan 2020 Update outlines plans to address the potential deficit by investing in RO treatment of Floridan aquifer water (Hazen & Sawyer, 2019). In addition to the City's plans to develop 6 MGD of Floridan aquifer supply, the City signed an agreement in January 2020 for the purchase of 3 MGD of C-51 Reservoir water.

In 1926, the 6 MGD capacity Peele-Dixie lime softening WTP was opened in western Fort Lauderdale. Over the years, the plant has been expanded and modernized, increasing its capacity to 20 MGD. In 2008 the WTP was converted from a lime softening to membrane facility with a treatment capacity of 12 MGD at 85 percent treatment efficiency. The Fiveash lime softening WTP was built in 1954 to treat 8 MGD. Through a series of expansions, the plant has been able to keep pace with the rapid growth experienced in Fort Lauderdale and today has a designed capacity of 70 MGD. The Fiveash WTP is supplied raw groundwater for treatment from the Prospect Wellfield.

Raw water for the City of Fort Lauderdale is supplied by the Peele-Dixie and Prospect wellfields, which draw from the SAS. The raw water is treated at two water treatment facilities, the Peele-Dixie nanofiltration plant and the Fiveash lime softening plant. There are 37 active wells between the two. The Peele-Dixie and Prospect wellfields have a combined pumping capacity of approximately 107 MGD. The City constructed two Floridan aquifer test wells at the Peele Dixie wellfield location to collect water quality and drawdown information as part of their plans to move towards RO treatment of Floridan aquifer water.

The City of Fort Lauderdale's CUP (Permit No. 06-00123-W) issued on September 11, 2008, for 20 years, allows the City to pump a combined annual average daily allocation for the two wellfields of 52.55 MGD. In 2018, the combined pumpage from the Peele-Dixie and Prospect wellfields averaged 41.49 MGD (11.06 MGD below the permitted allocation). The City's SFWMD CUP limitations on Biscayne and Floridan aquifer withdrawals are the following:

- Annual Allocation Limit – 22,334 million gallons (MG) - 61.19 MGD
- Biscayne Aquifer Annual Withdrawal Limit – 19,181 MG – 52.55 MGD
- Floridan Aquifer Allocation Limit – 3,153 MG – 8.64 MGD.

(Hazen & Sawyer, 2019)

The City of Fort Lauderdale maintains a total of 10 water system interconnections with BCWWS District 1 (3), the Cities of Plantation (1), Tamarac (3), and Pompano Beach (1), and Town of Davie (1).

Fort Lauderdale has adopted its finished water level of service for potable water at 170 gpcd (SFWMD LECWSP, 2018). In 2015, the average per capita demand throughout the City's service area was 176 gpcd (Table WS26). Projected water use for each municipality in the City's service area is estimated in Table WS27 by applying the 5-year average gallons per capita day of 164 to the population projections for the individual municipalities.

Table WS26 Fort Lauderdale Water Demand Forecast*

Year	Population	Overall Raw Water Per Capita (gpcd)	Finished Water Per Capita (gpcd)	Avg Day Biscayne Aquifer Raw Water Demand (MGD)	Avg Day Finished Water Demand (MGD)	Max Day Finished Water Demand (MGD)
2015	235,840	176	169	41.5	39.8	48.9
2020	241,454	172	164	41.5	39.6	48.7
2025	274,470	172	164	47.2	45.0	55.4
2030	292,768	172	164	50.4	48.0	59.1
2035	304,918	172	164	52.4	50.0	61.5
2040	315,109	172	164	54.2	51.7	63.6

Source: City of Fort Lauderdale Water Supply Facilities Work Plan 2020 Update DRAFT, November 7, 2019

Table WS27 Fort Lauderdale Water Demand Forecast by Service Area Municipality

Jurisdiction	2015	2020	2025	2030	2035	2040
TOTAL	39.86	39.60	45.01	48.01	50.01	51.68
Fort Lauderdale	29.61	29.52	34.23	36.56	38.12	39.38
Lauderdale by The Sea	0.70	0.60	0.66	0.65	0.64	0.63
Sea Ranch Lakes	0.12	0.11	0.11	0.12	0.12	0.12
BMSD	1.09	1.16	1.29	1.40	1.45	1.56
Davie	0.09	0.09	0.11	0.13	0.15	0.17
Lauderdale Lakes	0.06	0.06	0.06	0.06	0.06	0.06
Lauderhill	0.49	0.47	0.51	0.54	0.57	0.59
Lazy Lake	0.00	0.00	0.00	0.00	0.00	0.01
North Lauderdale	0.06	0.06	0.19	0.19	0.19	0.18
Oakland Park	5.26	5.22	5.37	5.69	5.92	6.09
Tamarac	0.35	0.33	0.33	0.33	0.34	0.33
Wilton Manors	2.02	1.95	2.15	2.33	2.45	2.55
Port Everglades	Population is included in BMSD					

Source: Calculation based on Hazen & Sawyer City of Fort Lauderdale Water Supply Facilities Work Plan 2020 Update Population and Demand Projections.

E. Conservation

Conservation practices for Broward County are presented in the sections below. The County actively solicits participation in its conservation programs through coordination with the Broward Water Advisory Board and its Technical Advisory Committee. It develops interlocal agreements in coordination with local municipalities and water management agencies and coordinates with local municipalities and their residents using email, Twitter,

Facebook, news releases and other methods that support and encourage participation in these County-wide programs which are outlined below.

Broward County

Within the County's Comprehensive Plan, policies within the Water Management Element that support and guide the County's water conservation initiatives include:

(*https://www.broward.org/BrowardNext/Documents/CompPlanDocs/WME%20GOPS-Adoption%20March%202019.pdf*)

> POLICY WM3.27. Broward County will advocate for water conservation measures in building practices and will implement programs to support plumbing retrofits, toilet rebates, Florida-friendly landscaping and Florida Yards and Neighborhoods best management practices (BMP), and water conservation education.
>
> POLICY WM3.33. Broward County will continue to enforce Chapter 39, "Zoning," Article VIII, "Landscaping for Protection of Water Quality and Quantity," of the Broward County Code of Ordinances, which reflects the NatureScape Broward program principles that promote the use of native and Florida Friendly landscaping and the preservation of native habitats in support of sustainable urban landscapes and the conservation of water resources.
>
> POLICY WM4.17. Broward County, in partnership with local municipalities and water and wastewater entities, will continue to develop and implement programming for Countywide water conservation and initiatives, including the Conservation Pays Program, Water Matters education and outreach programs, NatureScape Broward, and the NatureScape Irrigation Services, to promote water and energy conservation.

The District's Comprehensive Water Conservation Program is organized into regulatory, voluntary, and education-based initiatives which are discussed in the 2018 LEC Water Supply Plan Update. As mentioned in this plan, regulatory initiatives in Broward County that have been adopted include local landscape and irrigation ordinances. In addition, the County has developed door hangers in English, Spanish, and Creole which cites these irrigation restrictions and distributed these to code enforcement agencies during their annual meetings. It has also developed a sticker with the irrigation restrictions that are placed within irrigation controller boxes at all public schools that are evaluated as part of the Environmental Partnership between the County and School Board of Broward County.

Voluntary and incentive-based initiatives are offered primarily through both the Broward Water Partnership's Conservation Pays and NatureScape Irrigation Service programs, which are partnerships between the County and multiple municipalities and/or utilities which

leverage their local funds to secure additional outside funds to realize additional water savings (e.g., Water Savings Incentive Program, Cooperative Funding Program).

Through the County's NatureScape/School Board of Broward County Environmental Partnership Agreement, water savings within Broward County Public Schools are recognized through the "How Low Can You Go Challenge", a contest in partnership with the Miami Heat, which challenges students and schools to reduce energy and water consumption over a three-month period. Winning schools receive plaques and are recognized during halftime at a Miami Heat game. In addition, beginning in 2019, the County has established a Conservation Partner of the Year Award to recognize local municipalities for their water conservation efforts. This award is made at Water Matters Day.

The County is particularly active in education, outreach, and marketing initiatives to help foster a stronger environmental conservation effort throughout the Broward community. All the programs and activities identified in the 2018 LEC update as part of the District's Comprehensive Conservation Program, and as listed below, are part of the County's initiatives to promote water conservation:

School educational programs. The County regularly promotes water conservation in the schools through classroom programs and teacher and staff trainings. During the 2018-2019 school year, County staff assisted the Global Scholars program in arranging for field trips and providing guest speakers to augment the "World of Water" focus which was the theme for the year.

Media campaigns. The Conservation Pays program promotes indoor water conservation through several media campaigns each year. The most recent campaign, "Play Conservation Pays and Win" used online gamification to educate the public on water conservation, sustainability, and climate change and had over 5,000 players.

Informative billing. The Conservation Pays program provides utility partners with blurbs to include in its billing.

Training staff and associates at facilities and operations that provide irrigation and landscaping materials, services, and supplies. The NatureScape Irrigation Services trains provides training to irrigation industry professionals on an annual basis on developments in water-saving devices. In addition, through the Environmental Partnership with Broward Schools, training is provided to facility managers on ways to save water. The NatureScape Broward program is working with big box stores to

promote water conservation by including more Florida-friendly plant selections within their stores.

Florida-Friendly Landscaping™ demonstration gardens are promoted through the NatureScape Broward program which works with Broward communities, garden clubs, and homeowner's associations to promote Florida-friendly™ landscaping and awards Emerald awards to a select group of homeowners/businesses/municipalities that exemplify excellent landscapes.

Workshops and exhibits. The County regularly offers workshops to promote water conservation and annually promotes water conservation to residents at Broward Water Matters Day, an event in March which draws attendance of approximately 4,000 residents.

Landscape design and irrigation education for residents is also promoted at Water Matters Day.

Irrigation water audits for residential and other users are conducted regularly by the NatureScape Irrigation Service and in the schools as part of the Environmental Partnership Agreement.

Indoor water use audits are conducted within Broward schools as part of the Environmental Partnership Agreement.

Retrofit and rebate programs for replacing inefficient water-using devices with efficient ones are promoted through the Conservation Pays program. A new rebate program promoting smart irrigation equipment has recently been implemented through the NatureScape Irrigation Service.

Through the County's water conservation initiatives, as of the end of September 2019, cumulative water savings of 4.44 billion gallons have been realized. Some draft results are presented in Table WS28 and the estimation of municipal participation across the County is presented in Table WS29.

Table WS28 Water Savings Realized Through County Water Conservation Programs

Name of Program	Metric	Cumulative gallons saved
NIS	3,508 evaluations	1,643,802,415
Environmental Partnership Irrigation Evaluations	199 evaluations	275,010,020
Conservation Pays Program	155,581 toilet rebates	2,497,634,300
NatureScape Broward	4,619 Florida-friendly habitats	26,850,000

Source: County Water Conservation Program. The information contained in this table is in draft and subject to change.

Table WS29 Participation in County water conservation programs

Muinicipality/Utility/Other	NIS (mobile irrigation lab)	Broward Water Partnership Conservation Pays (Indoor Conservation)	NatureScape Broward (Florida-Friendly Landscaping™)	Water Matters Education and Outreach
BMSD/WWS	X	X	X	X
Broward County Public Schools	X	X	X	X
Coconut Creek	X	X	X	X
Cooper City	X	X	X	X
Coral Springs	X	X	X	X
Coral Springs Improvement Dist.	X			
Dania Beach	X	X		X
Davie	X	X	X	X
Deerfield Beach	X	X	X	X
Fort Lauderdale	X	X	X	X
Hallandale Beach	X	X	X	X
Hillsboro Beach				X
Hollywood	X	X	X	X
Lauderdale-by-the-Sea			X	X
Lauderdale Lakes			X	X
Lauderhill		X	X	X
Lazy Lake				X
Lighthouse Point			X	X
Margate	X	X	X	X
Miramar	X	X	X	X
North Lauderdale	X		X	X
Oakland Park	X		X	X
Parkland			X	X
Pembroke Park			X	X
Pembroke Pines	X	X	X	X
Plantation	X	X	X	X
Pompano Beach	X		X	X
Sea Ranch Lakes				X
Southwest Ranches			X	X
Sunrise	X	X	X	X
Tamarac			X	X
West Park			X	X
Weston		X		X
Wilton Manors			X	X

Source: County Water Conservation Program. The information contained in this table is in draft and subject to change.

Water Use Restriction/Initiatives. As required in Chapter 40E-24, Florida Administrative Code, Broward County has enacted its own irrigation ordinance under Chapter 36, "Water Resources and Management," Article II, "Water Emergencies," Section 36-55 "Restrictions on landscape irrigation, Year-round landscape irrigation measures", of the Broward County Code of Ordinances. These measures mirror the measures found in Chapter 40E-24 and impose year-round, Countywide landscape 2-day per week irrigation restrictions. However, this only applies to BMSD areas. Municipalities within Broward County may adopt the provisions in Section 36-55 into their own municipal code. The County's mandatory irrigation restrictions are posted on the County's Water Resources website at:

https://www.broward.org/waterresources/Pages/IrrigationRestrictions.aspx

and in the Broward County Code of Ordinances at:

https://library.municode.com/fl/broward_county/codes/code_of_ordinances?nodeId=PTIICOOR_CH36WAREMA_ARTIIWAEM_S36-55YEUNLAIRMEVA

The County's service areas have been under either the SFWMD's mandatory Phase I and/or Phase II water restrictions or under the County's year-round ordinance since 2005. Since then, the overall per capita consumption has dropped in response to a combination of conservation messaging, financial incentives (High Efficiency Toilet rebates), and ordinance restrictions.

BCWWS has developed and implemented a successful strategy to systematically identify and eliminate, where possible, causes of lost water due to inaccurate flow metering and/or leaky pipes. This comprehensive strategy includes regular inspection, calibration and repair/ replacement of meters, and the replacement of aging infrastructure. These actions have significantly improved water losses by reducing leaks and per capita consumption.

An essential part of the Broward initiatives is the implementation of high efficiency plumbing requirements supported by the Broward County Board of County Commissioners, the Broward League of Cities, and the Broward Water Resources Task Force. Chapter 6, Section 604.4, of the Florida Building Code contains standards for ultra-low volume plumbing fixtures to be used in all new construction and Chapter 9, Section 908.8.1, requires a minimum of 8 cycles of concentration for cooling towers and contains requirements for reuse concentrate of cooling tower makeup water for air handling systems with a 4-ton BTU capacity air handling system or greater as a condition for the receipt of a certificate of occupancy.

Use of Florida-Friendly Landscape Principles. Pursuant to Section 373.228, F.S., Chapter 39, "Zoning," Article VIII, "Landscaping for Protection of Water Quality and Quantity," of the Broward County code of Ordinances, reflects the Florida-Friendly and NatureScape Broward program principles that promote water and energy conservation, while creating a climate resilient landscape. This is in effect for the BMSD areas of Broward County and individual municipalities are adopting as a model landscape code. The Florida-Friendly Landscaping™ program has developed nine principles for sustainable landscapes:

1. Right plant, right place
2. Water efficiently
3. Fertilize appropriately
4. Mulch
5. Attract wildlife
6. Manage yard pests responsibly
7. Recycle yard waste
8. Reduce stormwater runoff
9. Protect the waterfront

Water Conservation-Based Rate Structure. Rate structures that encourage water conservation reward consumers that have low rates of water consumption with the lowest per gallon charge and penalize those showing higher rates of water consumption with a higher per gallon charge. BCWWS adopted a tiered rate structure in 2012 to incentivize water conservation. More information on the rate structure may be found at the web address below:

http://www.broward.org/WaterServices/RatesAndFees/Pages/SingleFamily.aspx

Rain Sensor Overrides for New Lawn Sprinkler System. Broward County's "Landscaping for Protection of Water Quality and Quantity" ordinance is codified in the Broward County Code of Ordinances Sections 39-75 to 39-94. Subsection 39-79(b)(11) includes the requirement for the location and specification of controllers of rain shutoff devices and soil moisture sensors as part of the landscape plan.

Public Information Program. Broward County has several targeted outreach programs for Broward County residents including NatureScape Broward, Water Matters Day, Know the Flow, NIS, and the NatureScape Broward School Board Environmental Partnership Agreement. NatureScape Broward provides educational workshops and training on the need for water conservation, the principles of NatureScape, and assistance in the design of a NatureScape landscape. Residents are encouraged to

apply for NatureScape certification following adoption of NatureScape best management practices on their landscapes.

BCWWS has developed a public education program that includes the development and distribution of brochures, educational materials for elementary and high school students, and presentations to homeowner and condominium associations regarding water supply, treatment, and conservation. The utility also supports the Water Matters Program by purchasing and distributing rain gauges at the annual Broward Water Matters Day event.

City of Fort Lauderdale

The City of Fort Lauderdale has an active water conservation program, as detailed in the City's CUP, ordinances, and in their 2014 Water Supply Plan Update. In the 2008 CUP Renewal, the City used an aggressive approach to control its water demand by developing a conservation program through several initiatives. The first is the City's current efforts at retrofitting and upgrading significant portions of the water delivery systems, including leak detection. The City anticipates that the percentage of unaccounted for water loss will be reduced as this process is implemented. The second is the passage of an ordinance that the City estimated would meet a 10 percent reduction in the projected demands, compared to historical demands. The final initiative is the continued implementation of existing programs such as: limitation of irrigation hours, ultra-low volume plumbing in new developments, xeriscaping principles, conservation-based rate structure, rain sensor requirements, and the City's water conservation education program. More recently, the city is planning on implementing advanced metering infrastructure system wide to enable two-way communication between utilities and customers using smart meters, communication networks and data management systems. The City expects to achieve certain quantifiable goals in the implementation of this program and the City will provide data to the SFWMD on the progress of this demand management program. The City estimates this effort will result in an estimated per capita use rate of approximately 170 gallons per day, which was used for calculating the future demands for the service area.

The City also participates in the Broward Countywide Conservation Pays Program, in collaboration with 18 partners, to provide a coordinated regional campaign focused on water conservation and the distribution of rebates and other incentives.

As partners in the NIS with 18 local water utilities, the City annually selects a group of large water users, including government facilities, parks, schools, and homeowner associations, where the greatest potential exists for significant water savings. Tailored irrigation evaluations are performed by the NIS team of certified experts to capture measured water savings. Best management practices that encourage the 'right plant in the right place' and

smart irrigation are included in each report to help to promote water conservation messaging that adds to long-term water savings.

Fort Lauderdale is a registered County municipality in the community wildlife habitat program through NatureScape Broward. This program promotes water conservation, water quality protection, and the creation of wildlife habitat through Florida-friendly landscape practices that encourage the prudent use of water resources, and the planting of native, non-invasive, and other drought tolerant plants.

F. Reuse

Section 373.250(1), F.S., states 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., states, "reuse is a critical component of meeting the state's existing and future water supply needs while sustaining natural systems." This section highlights the current levels of reuse within each water supply entities' service area.

Broward County

BCWWS operates the Broward County North Regional Wastewater Treatment Plant (WWTP) located in the City of Pompano Beach. The facility has a FDEP-permitted capacity of 95.0 MGD. It provides wastewater services for northern Broward County. In 2018, the annual average daily wastewater flow at the facility was 71.8 MGD. Wastewater effluent is divided between deep injection well disposal and ocean outfall discharge. Approximately 3.8 MGD of the treated wastewater is reused at the facility or at adjacent facilities for irrigation, process or cooling water. Approximately 0.2 MGD of the reuse generated at the North Regional WWTP is delivered for residential and public access area irrigation (Annual Reuse Report to FDEP submitted on November 29, 2018). The primary users include Broward County Septage Receiving Facility, Broward County North Regional WWTP, Fedex, Pompano Business Center, Freshpoint Pompano, and Pompano Center.

Based on historic flows to the ocean outfall, the facility is required to reuse 21.45 MGD (60 percent) of treated wastewater by 2025 to comply with the 2008 Ocean Outfall statute (Section 403.086(9), F.S.). BCWWS is promoting collaborative regional water supply strategies to meet the required 60 percent water reuse by 2025. BCWWS has developed a regional reuse master plan and County Ordinance No.2017-05 created mandatory reuse under Chapter 34, Article XI, Reclaimed Water, in the Broward County Code of Ordinances.

Disposal of the treated wastewater is primarily via deep injection wells (44 MGD) and by ocean outfall (24 MGD). However, of the water sent to the ocean outfall, an average 3

MGD was captured by the City of Pompano Beach for further treatment and distribution for irrigation use. The City of Pompano Beach Oasis Reclaimed WTP has a capacity to treat 7.5 MGD of secondarily treated wastewater. Overall, water reuse at the facility and through the City of Pompano Beach accounts for approximately 5 percent of the wastewater treated at the facility.

The County has initiated several reclaimed pipeline projects over the past few years. Northeast of the North Regional WWTP is the City of Pompano Beach, Pompano Highlands neighborhood. BCWWS has installed reclaimed water pipelines as part of a neighborhood improvements program. The reclaimed system is complete, and the City of Pompano Beach has agreed to provide reclaimed water for residential landscape irrigation from the City of Pompano Beach Oasis Reclaimed WTP, which draws secondarily treated effluent for feed water from a North Regional WWTP pipeline. The City of Coconut Creek entered into an interlocal agreement with BCWWS in April 2016 to receive up to initially 1.4 MGD of reclaimed water with a long-term expectation of 3 MGD. Two connections were established to serve Coconut Creek.

BCWWS is proceeding with expansion of the North Regional WWTP Reclaimed System as well as extending a 42-inch diameter reclaimed pipeline to serve beneficial reuse users in both Broward and Palm Beach Counties. The expansion of the Reclaimed Water Treatment System at the North Regional WWTP is underway and a contract has been let for construction. Pre-construction activities are nearing completion and it is anticipated that construction of the pipeline will commence the first quarter of 2020. The project scope includes approximately 5 miles of 42-inch diameter reclaimed transmission main from the North Regional WWTP to the Palm Beach County line (Reclaimed Status Report submitted January 24, 2018). Approximately 20 MGD of potential reclaimed users have been identified in the, "Broward County Outfall Rule Detailed Plan North Regional Wastewater Treatment Plant Report," prepared by Hazen and Sawyer in 2013. County staff are also pursuing new potential users. The County continues to work towards meeting the requirements of the 2008 Ocean Outfall statute before 2025.

City of Fort Lauderdale

The City of Fort Lauderdale's George T. Lohmeyer Wastewater Treatment Facility is a central regional facility used to treat wastewater in a region encompassing Port Everglades, the Cities of Fort Lauderdale, Wilton Manors, and Oakland Park and parts of the City of Tamarac, Town of Davie, and BMSD. The facility has an FDEP-permitted capacity of 56.7 MGD. Treated effluent from the facility is disposed through five deep injection wells.

As stated in the City's Draft Water Supply Facilities Work Plan (November 7, 2019), "The facility does not currently treat effluent to reclaimed water standards for public irrigation or other offsite uses. However, on average the plant uses about 4-mgd of its own secondary effluent as in-plant re-use instead of potable water. Additionally, the City is participating in the County-wide Integrated Water Resources Plan Grants for feasibility studies related to potential beneficial reuse. These have included a 2008 feasibility study for selected reclaimed water projects within the City for a 50% cost share for $125,000. A second feasibility study in 2009 was for the reclaimed water in the area of the Convention Center Broward County provided a 50% cost share for $5,000. The City of Fort Lauderdale prepared a report assessing reclaimed water opportunities in November 2008 titled "Feasibility Study for the Implementation of Selected Reclaimed Water Projects with the City of Fort Lauderdale". Key conclusions of the report were (CDM, 2008):

- The GTL WWTP is located far from any significant users of reclaimed water, such as golf courses. Therefore, the construction of an irrigation-quality reclaimed water production facility at or near the plant to provide further treatment of effluent to public reuse standards is not feasible. There is little available space on the plant site or plant vicinity to construct the required treatment facilities. In addition, due to high levels of infiltration into gravity sewer piping located near coastal areas and waterways, the chloride concentration in the treated effluent over 1,100-mg/L, resulting in unaffordable levels of treatment to reuse standards at the GTL WWTP site. Therefore, the only practical alternatives for implementing reuse systems are off-site and near potential beneficial uses of reclaimed water;
- Two options studied (reclaimed water facilities at the E-Repump Station and the Former Composting Facility1) are technically feasible but are not be economically viable.

The City of Fort Lauderdale continues to assess water reuse opportunities to identify and assess cost effective alternative water supply opportunities. Indirect potable reuse systems have been evaluated by the City; none have emerged as economically feasible. However, due to the dual benefits of providing more disposal capacity and augmenting local water supplies, the City continues to contemplate indirect potable reuse opportunities when assessing alternative water supply investment decisions."

City of Hollywood

The City of Hollywood operates a regional WWTP that is subject to the requirements of the 2008 Ocean Outfall statute. The City of Hollywood implemented a reuse system that delivers up to 4 MGD of blended low-salinity reuse water for irrigation and an annual average of 4 MGD of high-salinity reuse water that is used internally at the City's Southern

Regional Wastewater Treatment Plant. The City is working towards having 10 MGD of reuse capacity by 2025 by the following methods:

- Credit for Existing Onsite Process Reuse – 4 MGD
- Reuse Water for Irrigation within the City – 1.5 MGD
- Contracted Reuse – 4.5 MGD

The City feels that the existing system may be expandable to additional contract, residential irrigation and commercial uses in the future up to an additional 0.3 MGD (Hollywood, 2020).

SPECIAL RECOMMENDATIONS AND ACTIONS

BCWWS, as a Water Supply Entity, is responsible for the implementation of the water supply development projects identified in the 2018 LECWSP Update, as approved by the SFWMD governing Board, in November 2018. The County projects listed in Chapter 6 and Appendix E of the 2018 LECWSP Update are listed below.

A. Broward County Water Reuse Projects

BCWWS, in compliance with the requirements of the ocean outfall legislation, developed the "Broward County Outfall Rule Detailed Plan North Regional Wastewater Treatment Plant Report", prepared by Hazen and Sawyer in 2013. This plan documents the County's intent to produce an additional 21.45 MGD of reclaimed water. Of the 21.45 MGD reclaimed water production, 19.7 MGD will be produced at North Regional WWTP. (The remaining reclaimed water will be produced through the Pompano Beach filter facility.) BCWWS reclaimed system projects are outlined below.

North Regional WWTP Capacity Improvements. The capacity improvements construction project will consist of a 16 MG reclaimed water filter capacity expansion with high level disinfection and associated pumping facilities for future expansion of the reclaimed water distribution system at the North Regional WWTP. The project will expand the use of reclaimed water for irrigation. The expansion will include a treatment module, pumping, piping and chemical modifications, emergency power, and related site improvements. Construction is anticipated to be complete by 2021 at an estimated cost of $59 million. As of September 2019, the project is 25 percent complete (Quarterly Report for Major Capital Projects in the Public Works Department Memorandum dated October 3, 2019).

North Regional WWTP Reclaimed Water Transmission System. The reclaimed water transmission system for new customers in Palm Beach County will be constructed through an Interlocal Reclaimed Water Agreement between Broward County and Palm Beach County. In this agreement, Broward County is tasked with construction of transmission and treatment facilities to provide approximately 15 MGD of reclaimed water to Palm Beach County and 3 MGD to North Springs Improvement District. In addition, potential new users along the transmission corridor in Broward County will be identified for service. The project will expand the use of reclaimed water for irrigation. The project construction is anticipated to be complete by 2021 at an estimated cost of $29 million (Quarterly Report for Major Capital Projects in the Public Works Department Memorandum dated October 3, 2019).

North Regional WWTP Reclaimed Water Transmission System Expansion. Approximately four miles of 24-inch diameter reclaimed water main will be constructed from NW 39th Avenue in Coconut Creek to North Springs Improvement District, to connect with approximately 4,000 linear feet of reclaimed water main that was constructed as part of the County's Hillsboro Pines Neighborhood Project. The project will expand the use of reclaimed water for irrigation. The project construction is anticipated to be complete by 2021 at an estimated cost of $6.4 million (Quarterly Report for Major Capital Projects in the Public Works Department Memorandum dated October 3, 2019).

B. C-51 Reservoir Project

BCWWS has associated 3 MGD of their total 6 MGD purchase with their SR Wellfield CUP to offset demands for raw water from their 3A/3BC service area. Construction is scheduled to begin in October 2019 with full operation anticipated by October 2021.

C. Technical Water Resources Assessments

Climate change and sea level rise pose significant threats to regional water supplies. Local impacts are accelerated by increased wellfield pumpage, rising sea level, and aging urban drainage infrastructure, leaving municipalities and water utilities grappling with how to balance the planning needs with the financial challenges.

The County is continuing to partner with USGS to advance the expansion of the Inundation Climate vulnerability model focused on coupled hydrologic impacts of saltwater intrusion, surface and groundwater elevations, and stormwater inundation, using the SWR and URO packages, throughout the entire urban extent of the County.

The County is also using the results of the 2014 FEMA study to calculate Future Conditions 100-year flood elevations that are anticipated to occur in 2070 accounting for sea level rise and more intense rainstorms. The effort includes data collection of recent or previously not included drainage infrastructure, refined model grid and associated LiDAR, land use update, addition of detention storage and ponded drainage routine, model calibration to a recent flooding storm event, and incorporation of future tide levels and a 100-year rainstorm event. It is anticipated the modeling will be completed in the Fall of 2019 and, once approved, will be formalized as the second map of the Future Conditions Map Series.

Upper Floridan Aquifer Geotechnical Study

Broward County, in cooperation with USGS, completed the Phase 1 Feasibility Study of the Upper Floridan Aquifer in March 2014. The study has compiled all available well information and commissioned a new well (G-2984) to be drilled, cored, and logged. Using borehole

and core sample data (84 wells at 33 sites), the hydrogeologic framework of the Floridan Aquifer system in Eastern Broward County was delineated. This effort helped to construct unique cross-sections and maps representing the stratigraphic and hydrogeologic units of the Floridan Aquifer system in urban Broward County. An additional component of the project was to complete seismic profiling along approximately 14 miles of the Hillsboro Canal, which resulted in seismic reflection data that were then correlated to the borehole geophysical data (Reese et al., 2014).

The results offer better definition of the stratigraphic and hydrogeologic characteristics of the aquifer, which will improve upon the selection of new well locations or for water storage options, such as ASR. Building on the successful use of seismic profiling in the first study, Phase 2 of this Feasibility Study was commissioned and completed in 2017 (Cunningham et al., 2018). It further refined the hydrogeologic framework and regional extent of information by collecting 80 miles of high-resolution seismic profiles from canals in Broward County along with well logs and cores or cutting from 44 wells. Mapping of the Oldsmar, Avon Park, and Arcadia formations was completed over the 425 square mile study area. In addition, many unconformities that might identify faults that are either near-vertical reverse faults or karst collapse structures throughout the County were identified. Water utilities in these areas may consider further studies around these features when planning project near their vicinities.

D. Broward County Water Partnership

The Broward County Water Partnership is an ongoing High Efficiency Toilet Replacement and Water Conservation Incentives Program. Broward Water and Wastewater Services are media partners in the Countywide Water Conservation Incentives Program, launched in 2011. This program has provided approximately 4,500 high efficiency toilets with an estimated water savings of 450 thousand gallons per day. The program utilizes monthly promotional material, public service announcements, radio adds, etc., to promote a consistent water conservation messaging throughout the partner service areas. This covers almost 80 percent of Broward County. Historically, this program has been supported, in part, through the SFWMD's Water SIP and Cooperative Funding Programs, which have provided $277,000 in matching funds through 2018. Neither of these programs are currently funding the partnership.

Additionally, BCWWS' High Efficiency Toilet Rebate Program has been in existence since 2010 and has offered over $250,000 in billing credits for replacing 2,500 water wasting toilets. This effort is supported by $30,750 of matching funds from the SFWMD. Promotion of this program throughout the BCWWS service area will continue through this next five-year planning period unchanged.

E. NatureScape Irrigation Service

The NIS water conservation program provides irrigation system evaluations for large properties in 20 cities and water districts. The NIS team conducts a test of the irrigation system and provides comprehensive recommendations for improving overall efficiency - saving water, reducing runoff of pollutants, and keeping canals and water bodies clean in our urban areas. The program has saved more than 1.5 billion gallons of water since 2005. In 2019, the program initiated a new residential incentive program to offer rebates for outdoor irrigation systems updates.

BCWWS CAPITAL IMPROVEMENTS

This section provides a brief description of the BCWWS Capital Improvements Program and Policies for Water Supply.

A. Work Plan Projects

The 2020 Work Plan includes the listing of public and regional water supply projects and programs over the next 10-year period (at a minimum) that may be necessary to serve the BCWWS service area and large users. The following sections include additional information related to the development of traditional and AWS sources, and conservation and reuse initiatives that are being advanced to support water resource and water supply protections.

Broward County, as a Water Supply Entity, is responsible for the implementation of the water supply development projects identified in the 2018 LECWSP Update, as approved by the SFWMD Governing Board in November 2018. BCWWS reviewed the information in the 2018 LECWSP Update pertaining to the AWS projects. BCWWS determined that, because additional water supply above what is currently permitted by the SFWMD is not needed in the next 20-year period, the District 1 and District 2A/North Regional WTP expansion and Floridan Aquifer development projects would be unfunded in the County's Capital Improvement Plan. These projects will be re-evaluated and re-established as funded projects when the need for additional water supply arises.

BCWWS continues to evaluate raw and finished water demands throughout their utility service areas and provide the SFWMD with annual progress reports regarding the status of the AWS projects. Table WS23 and Table WS24 below summarize the AWS and water conservation projects contained in the 2018 LECWSP Update that are directly related to BCWWS' water supply development. Table CI-F, excerpted from the 2019 Broward County Capital Improvement Plan, is provided below for comparison.

The County projects listed in Chapter 8, Table 8-1, of the 2018 LECWSP Update are described below with an update on the project status.

- District 1A Treatment Plant Expansion and Floridan Aquifer Development. (RO, WTP, Floridan Wells, and a Disposal Well) Two Floridan Test/Production wells were completed in 2014 and found to have a Total Dissolved Solids concentration greater than 7,000 mg/L. The County is re-assessing the potential production capacity and water quality of the Upper Floridan source for ASR use. The District 1A 3 MGD Treatment Plant Expansion project has been unfunded and will be evaluated annually for future funding based on projected water demands.

- District 2A Treatment Plant Expansion and Floridan Aquifer Development. (RO, WTP, Floridan Wells, and a Disposal Well) The addition of 6 MGD of RO treatment, concentrate disposal, development of a Floridan Aquifer source, and raw water transmission piping and pumping facilities project has been unfunded and will be evaluated annually for future funding based on projected water demands.
- C-51 Reservoir Project Phase 1 – North Regional Wellfield. BCWWS has entered into an agreement for capacity allocation in Phase 1 of the C-51 Reservoir Project with Palm Beach Aggregates and may, in the future, modify the existing CUP to add 3 MGD of C-51 Reservoir Project offset water to create more operational flexibility between the District 2A and North Regional Wellfields.
- C-51 Reservoir Project Phase 1 – South Regional Wellfield. BCWWS has entered into an agreement for capacity allocation in Phase 1 of the C-51 Reservoir Project with Palm Beach Aggregates and has a CUP allocation for 3 MGD of C-51 Reservoir Project offset water to offset the SR Wellfield raw water demands for the 3A/3BC service area. The C-51 Reservoir Project is scheduled to begin construction in September 2019 and be operational by October 2021.
- Broward Water Conservation Programs. The conservation programs detailed in the previous sections have a water savings goal of reducing the per capita consumption by 10 gallons per day by 2029, as established in the 2019 IWRP update.

Table WS30 Proposed Potable and Non-Potable Public Water Supply Development Projects Listed in SFWMD 2018 LECWSP Update

Implementing Entity	Project Name	Project Description	Project Capacity (MGD)	Total Capital ($M)	Est. Date Complete
POTABLE - FLORIDAN AQUIFER SYSTEM					
BCWWS	District 1 Water Supply Improvement Alternatives	Construct Floridan Aquifer System water supply wells, connecting raw water transmission main, and RO treatment facility	3.00	5.6	2025
BCWWS	District 2 Water Treatment Plant Expansion	Construct Floridan Aquifer System water supply wells, connecting raw water transmission main, and RO treatment facility	6.00	33.3	2026
Fort Lauderdale	Dixie Floridan Aquifer System Water Supply/Treatment Facility	Expansion of the Peele-Dixie nanofiltration Water Treatment Plant to include RO treatment	6.00	22.9	2030
Hollywood	RO Train E	Installation of new RO train	2.00	2.0	2030
Hollywood	Floridan Aquifer System Wells F14 and F15	Construction of 2 Floridan Aquifer System wells	4.00	3.0	2034
NONPOTABLE - STORAGE/ASR					
BCWWS	South Regional Wellfield C-51 Reservoir Project Phase 1 Recharge Offset	BCWWS and PBA agreement for capacity allocation in C-51 Reservoir Project Phase 1 for BCWWS South Regional Wellfield (Authorized under Current CUP)	3.00	13.8	2020
BCWWS	District 2/ North Regional Wellfield C-51 Reservoir Project Phase 1 Recharge Offset	BCWWS and PBA agreement for capacity allocation in C-51 Reservoir Project Phase 1 for BCWWS North Regional Wellfield (not yet under CUP)	3.00	13.8	2026
Dania Beach	BCWWS South Regional Wellfield C-51 Reservoir Project Phase 1 Recharge Offset	Dania Beach and PBA agreement for capacity allocation in C-51 Reservoir Project Phase 1 for BCWWS South Regional Wellfield (Authorized under Current CUP)	1.00	4.6	2023
Hallandale Beach	BCWWS South Regional Wellfield C-51 Reservoir Project Phase 1 Recharge Offset	Hallandale Beach and PBA agreement for capacity allocation in C-51 Reservoir Project Phase 1 for BCWWS South Regional Wellfield (Authorized under Current CUP)	1.00	4.6	2023

Table WS31 Water Conservation Projects Listed in SFWMD 2018 LECWSP Update

Project Name	Entity Name	Project Type	Fiscal Year	Proposed Water Savings (MGY)
USEPA WaterSense HET Replacement/ Credit Program	Broward County Board of County Commissioners	Indoor Plumbing	2013 – 2017	18.3
HET Rebate Program	Broward Water Partnership	Indoor Plumbing	2013 – 2017	42.2
NIS Smart Irrigation Tech. Retrofit Program	Broward Water Partnership	Irrigation	2015 - 2017	66.8

B. Capital Improvements Element (CIE) / Schedule

The purpose of the CIE is to evaluate the need for public facilities as identified in other Comprehensive Plan elements. The CIE also includes cost estimates for improvements for which the County has fiscal responsibility; an analysis of the fiscal capacity of the County to finance and construct improvements; and financial policies to guide the funding of improvements to address needs identified in other Comprehensive Plan elements. The CIE also ensures that an adequate concurrency management system is implemented by the County pursuant to Section 163.3180, F.S. The CIE shows how infrastructure needs identified in other elements of the Comprehensive Plan will be funded. The Element contains a list of the various improvement projects for public infrastructure that are scheduled in the next five years, including the Transportation Improvement Program (TIP), potable water, sanitary sewer, drainage, recreation, aviation, Port Everglades, beach re-nourishment, transit, community development, and public school facilities.

The focus of the CIE Policies is to:

- Evaluate and proactively plan for the County's infrastructure needs
- Plan and implement adaptation strategies for short and long-term climate change events and impacts
- Implement and regulate infrastructure in a sustainable manner
- Monitor feasibility of construction of improvements
- Coordinate and collaborate with state, regional and local agencies and governments on infrastructure funding strategies

The Broward County Comprehensive Plan (Plan) describes how the County will provide required services to meet the current and future needs of the community and economic development, while protecting the natural environment. This policy document provides a coordinated approach to making many decisions regarding land use and the location of development, the extension of urban services, the placement of community facilities, adaptation to climate change impacts and others. The Plan is composed of 18 Elements

that contain GOP organized by topics. Each Elements' Support Document contains the data and analysis used in developing the GOP. The Plan also contains a map series that generally describes existing or future conditions related to the Plan's Elements. The principles and strategies contained in the GOP guide the County's future decisions to help ensure that we are prepared to meet challenges today and in the future. The Plan is a "living" document that is updated to respond to changing conditions in matters such as population, technology, organizational structure, the economy, and climate. The process of developing and updating the plan is a community-wide effort that requires compiling and analyzing new data, jointly developing coping strategies, and amending the GOP. The County's current Comprehensive Plan documents were adopted March 28, 2019 and are available on the web at:

https://www.broward.org/BrowardNext/Pages/ComPlanDocs.aspx

BCWWS planning is conducted on a 10-year cycle to identify system improvements necessary to accommodate future growth and to address regulatory changes. Comprehensive planning efforts were first initiated in 1988 with the "Water and Wastewater Master Plan", which was revised in 2004. The Plan addressed the need for facility improvements based upon anticipated build-out conditions in each of the BCWWS service areas over a 20-year planning horizon. The Alternative Water Supply and the Effluent Disposal and Reclaimed Water master plans were completed in 2010. The plans identify treatment plant improvements and/or expansions needed to accommodate the projected population and new regulatory requirements. The Retail Facilities Master Plan was completed in 2016 to analyze retail distribution and collection network improvements the through year 2040. A Regional Wastewater System Master Plan effort is underway and should be completed by 2021. Broward County CIP incorporates the various master plan recommendations into a 5-Year Capital Program. Projects are funded through BCWWS revenue bonds and pay-as-you-go funding supported with user fees.

The Adopted Broward County Capital Program FY19-23 outlines the anticipated capital projects for the Fiscal Year 2019 through 2024 planning period. Water and Wastewater Services projects are listed in the Enterprise Capital Section under Water & Wastewater Five Year Summary and Project Descriptions which can be accessed on the web at:

https://www.broward.org/Budget/Archives/Documents/EnterpriseFundsCapitalFY19Adopted.pdf

GOALS, OBJECTIVES AND POLICIES

Existing GOP of the recently adopted BrowardNEXT2.0 Comprehensive Plan (2019) were reviewed to determine if any updates would be needed to meet new and existing statutory requirements, as well as for consistency with the 2020 Work Plan. The following issues were considered:

- Implementation of the work plan
  - Policies implementing the work plan by incorporating the work plan into the Comprehensive Plan or adopting the work plan by reference
- When adopting the work plan by reference, the policy must identify the title and author of the document and clearly indicate what provisions and edition of the document are being incorporated [Section 163.3177(1)(b), F.S.]
- Concurrency provisions for water supply availability
- Water conservation programs and activities specific to the local government
- AWS projects
- Local governments must incorporate into the Sanitary Sewer, Solid Waste, Drainage, Potable Water, and Natural Groundwater Aquifer Recharge element AWS project(s) selected from the those identified in the applicable regional water supply plan, pursuant to Section 373.709(2)(a), F.S., or proposed by a local government under Section 373.709(8)(b), F.S. [Section 163.3177(6)(c)(3), F.S.]
- Reclaimed water programs
- Level of service standards specific to the local government
  - Update and/or review the level of service standards. The level of service standards needs to be consistent throughout the Comprehensive Plan and work plan
- Population projections
- Update and/or review the population projections. The projections should be consistent throughout the Comprehensive Plan and work plan update. If they are not consistent, explain why
- Water supply/source needs and demands
- Intergovernmental coordination with the SFWMD, water suppliers, and other local governments, including areas that cross jurisdictional boundaries. Identify any joint planning areas and joint infrastructure service areas related to water supply
- Incorporation of the work plan into the Comprehensive Plan
- Incorporation of another local government's or water supplier's work plan into the Comprehensive Plan
- Sector Plan coordination and implementation

The BrowardNEXT 2.0 Comprehensive Plan Elements already includes several GOP that support the County's Water Supply Facilities Work Plan and the requirements of Chapters 163 and 373, F.S. The supporting GOP can be found within the following elements:

- Capital Improvements (CI)
- Climate Change (CC)
- Conservation (C)
- Coastal Management (CM)
- Intergovernmental Coordination (IC)
- Water Management (WM)

More specifically, the selected GOP reflect the County's commitment to water supply planning and water resource protections and are inclusive of any recommended changes that will be made. The GOP listed below are organized by issue topic, as discussed above.

Issue #1 - Implementation of the Work Plan

OBJECTIVE WM1. Water and Wastewater Services
Broward County's Water and Wastewater Services (WWS) will provide raw water, potable water, sanitary sewer, surface water, and storm water management services within the agency's designated service areas that are cost-effective, equitable, adequate, and sustainable, while meeting applicable federal, state, and local design, construction, and operational standards and regulations.

POLICY WM1.1. WWS will provide potable water and sanitary sewer to current and future customers of the WWS systems using cost-effective, equitable, and adequate potable water, and sanitary sewer infrastructure and facilities that meet applicable federal, state, and local standards.

POLICY WM1.2. WWS will maintain funding for systems improvements identified in the Broward County Capital Improvements Program (CIP) to alleviate potable water and sanitary sewer deficiencies within its service area.

POLICY WM2.1. Within eighteen (18) months of the adoption of an update to the SFWMD LECWSP, utilities located within Broward County will update and adopt their 10-Year Water Supply Facilities Work Plans, pursuant to Chapters 163 and 373 of the Florida Statutes, to incorporate the Regional Alternative Supply Plan and to evaluate water resource needs, identify water supply deficiencies, and plan for alternative water supply sources and projects to serve existing and new development within the County.

Issue #2 - Concurrency for Water Supply Availability

POLICY BMSD 1.1.5. Future land uses shall be coordinated with the availability of public facilities and services.

OBJECTIVE BMSD 1.2. Future Land Use Map Amendments

Proposed amendments to the BMSD Future Land Use Map shall be evaluated based on the availability of public facilities and services, site suitability, compatibility with surrounding uses, complete streets, transportation infrastructure, affordable housing, and potential impacts on natural resources.

POLICY BMSD 1.2.1. Future land use amendments shall include the minimum amount of land needed to ensure:

1. Adequate facilities and services are available to support the uses
2. The site is suitable for the proposed use
3. Mobility options of the site are suitable for the proposed use and are designed using Complete Streets Principles outlined in the Transportation Element
4. Urban Sprawl is discouraged
5. Sufficient affordable housing is provided to meet the needs of the area
6. The proposed use is compatible with surrounding uses

POLICY BMSD 1.2.2. Availability and capacity of the following public facilities and services shall be considered:

1. Potable water
2. Sanitary sewer
3. Solid waste
4. Roads, sidewalks, and bicycle facilities
5. Public transit
6. Drainage
7. Parks and recreation facilities
8. Hurricane shelters and evacuation routes
9. Public Schools

OBJECTIVE CI1. Evaluate and Proactively Plan for the County's Infrastructure Needs. The Capital Improvements Element (CIE) will be reviewed and updated annually to reflect the County's budget process to ensure it includes the resources and improvements required to address present infrastructure deficiencies and future infrastructure needs, as discussed in other

Elements of this Comprehensive Plan. These deficiencies and needs are addressed in the Capital Improvements Program (CIP) on Tables CI-A through CI-N.

POLICY CI1.1. Capital projects will be evaluated using the following criteria:

1. Elimination of hazards that impact public health and safety,
2. Promotion of efficient development and prevention of urban sprawl,
3. Level of impact on operating budget,
4. Protection of prior infrastructure investments,
5. Consistency with County plans and the plans of other agencies,
6. Elimination of existing deficiencies,
7. Maintenance of adopted levels of service (LOS),
8. Availability of funds and reflection of sound fiscal policies,
9. Implementation of County Commission adopted goals,
10. Climate resilience.

POLICY CI1.2. Continue implementation of approved master plans as outlined within the Transportation, Water Management, Solid Waste, Public Schools Facilities, Airport, and other Comprehensive Plan Elements.

POLICY CI1.8. Continue to allocate funds for the replacement and renewal of infrastructure in an amount which will minimize operating costs and maximize the life of the infrastructure.

POLICY CC2.7. Broward County shall update the assessment of public investments and infrastructure at risk from sea level rise and other climate change related impacts every 5 years. Specifically, the County shall analyze vulnerability to facilities and services, including but not limited to: buildings; water and wastewater treatment plants, transmission lines and pumping stations; storm water systems; roads, rail, bridges, and all transportation and transit infrastructure; power generation facilities and power transmission infrastructure; critical airport and seaport infrastructure; hospitals; city halls; and police and fire stations.

POLICY WM2.8. Broward County will identify water infrastructure at risk from unified sea level rise projections of 9 to 26 inches (timeframe of 2010 to 2060) and other climate change related impacts by 2025 and update this assessment every 5 years.

Issue #3 - Water Conservation Programs

POLICY CC3.8. Broward County, in conjunction with its municipalities, shall promote species diversity, the planting of native and drought-tolerant landscapes, and sustainable urban forestry practices in order to protect the health and resiliency of our natural resources to the impacts of climate change.

POLICY CC3.9. Broward County shall continue to implement the NatureScape Broward program and encourage the use of native and non-invasive, subtropical, and rare native plants in the urban landscape in order to promote water and energy conservation while creating a climate resilient landscape. Furthermore, these plants should be salt, wind, and drought tolerant, where appropriate, and maintained consistent with NatureScape Broward and Florida-Friendly Landscaping Best Management Practices.

POLICY CC5.9. Broward County, through the Master Partnership Agreement with the School Board of Broward County, shall continue to support existing County and municipal education and outreach programs including, but not limited to: energy efficiency and water conservation; waste reduction and recycling; urban forests and native landscaping; and air quality and GHG reduction. The County will also support education and outreach programs on other sustainable issues and work cooperatively to link these overlapping themes with local climate impacts in all educational materials and messages.

POLICY WM1.8. WWS will continue to implement a leak detection program, conservation-oriented utility service rate structure, and other conservation measures required by Broward County ordinance.

POLICY WM1.9. WWS will maintain comprehensive water use profiles for service area customers including customer class, utility rate profiles, water usage patterns, and seasonal variations to increase the effectiveness of conservation efforts by focusing methods on those elements with the greatest water savings potential. WWS will reference the water use profile to expand and/or implement programs that promote conservation of water resources such as toilet rebates and water use analyses.

POLICY WM2.2. In order to protect and conserve the Surficial Aquifer System and limit demands on the regional water management system, the Broward County Environmental Protection and Growth Management Department (EPGMD) will continue to investigate and promote the development of alternative water supply strategies such as: 1. Continued promotion of water conservation; 2. Brackish water aquifer development; 3. Storm water capture, storage, and reuse; 4. Aquifer recharge; 5. Aquifer Storage and Recovery (ASR); 6. Reclaimed water use; 7. Improvements to the secondary canal infrastructure; 8. Additional regional surface water storage; and 9. Other technologies and management strategies consistent with the goals of the most recently adopted LECWSP Update and Broward IWRP.

POLICY WM3.27. Broward County will advocate for water conservation measures in building practices and will implement programs to support plumbing retrofits, toilet rebates, Florida-friendly landscaping and Florida Yards and Neighborhoods best management practices (BMPs), and water conservation education.

POLICY WM3.32. Broward County will protect aquifers from depletion through water conservation and preservation of the functions of high recharge areas including, but not limited to, the water conservation areas and water preserve areas.

POLICY WM3.33. Broward County will continue to enforce Chapter 39, "Zoning," Article VIII, "Landscaping for Protection of Water Quality and Quantity," of the Broward County Code of Ordinances, which reflects the NatureScape Broward program principles that promote the use of native and Florida Friendly landscaping and the preservation of native habitats in support of sustainable urban landscapes and the conservation of water resources.

POLICY WM4.8. Broward County will coordinate with Broward County entities, FDEP, and EPA in the implementation of Florida's Ocean Outfall Law requirements, per Section 403.086, Florida Statutes, and support and promote collaborative regional and sub-regional water resource and supply strategies, water resource development, conservation, and reclaimed water projects that provide economies of scale and regional benefits, with special emphasis on those areas that currently contribute to the volume of wastewater being discharged through open ocean outfalls, with the goal of achieving 60% reuse of water currently discharged via outfalls by the year 2025.

POLICY WM4.17. Broward County, in partnership with local municipalities and water and wastewater entities, will continue to develop and implement programming for Countywide water conservation and initiatives, including the Conservation Pays Program, Water Matters education and outreach programs, NatureScape Broward, and the NatureScape Irrigation Services, to promote water and energy conservation.

Issue #4 - Alternative Water Supply Projects

POLICY WM1.4. WWS shall identify and plan for development of alternative water supplies by the year 2025 sufficient to meet public water supply needs through the year 2040.

POLICY WM2.1. Within eighteen (18) months of the adoption of an update to the SFWMD LECWSP, utilities located within Broward County will update and adopt their 10-Year Water Supply Facilities Work Plans, pursuant to Chapters 163 and 373 of the Florida Statutes, to incorporate the Regional Alternative Supply Plan and to evaluate water resource needs, identify water supply deficiencies, and plan for alternative water supply sources and projects to serve existing and new development within the County.

POLICY WM2.2. In order to protect and conserve the Surficial Aquifer System and limit demands on the regional water management system, the Broward County Environmental Protection and Growth Management Department (EPGMD) will continue to investigate and promote the development of alternative water supply strategies such as: 1. Continued

promotion of water conservation; 2. Brackish water aquifer development; 3. Storm water capture, storage, and reuse; 4. Aquifer recharge; 5. Aquifer Storage and Recovery (ASR); 6. Reclaimed water use; 7. Improvements to the secondary canal infrastructure; 8. Additional regional surface water storage; and 9. Other technologies and management strategies consistent with the goals of the most recently adopted LECWSP Update and IWRP.

POLICY WM3.25. Broward County will encourage the use of reclaimed water as an integral part of its wastewater management program and evaluate the costs and benefits of adaptation alternatives to increase efficiency and optimize the capacity of existing reclaimed water facilities where economically, environmentally, and technically feasible.

POLICY WM3.26. Broward County will continue public education, coordination, and program support for the expansion of beneficial use of reclaimed water, while encouraging regional reuse projects.

POLICY WM4.7. Broward County will coordinate regionally to advance the use of the IWRP and Regional Reuse Master Plan tools to increase flood protection, water quality treatment, water supply sources, storm water storage, wetland sustainability, ground water recharge, use of reclaimed water for irrigation, aquifer recharge, and environmental enhancement, where technically, environmentally, and economically feasible, to protect water resources and develop climate resilience.

POLICY WM4.8. Broward County will coordinate with Broward County entities, FDEP, and EPA in the implementation of Florida's Ocean Outfall Law requirements,¬ per Section 403.086, Florida Statutes, and support and promote collaborative regional and sub-regional water resource and supply strategies, water resource development, conservation, and reclaimed water projects that provide economies of scale and regional benefits, with special emphasis on those areas that currently contribute to the volume of wastewater being discharged through open ocean outfalls, with the goal of achieving 60% reuse of water currently discharged via outfalls by the year 2025.

Issue #5 - Reclaimed water programs

POLICY CC2.17. Broward County should develop, in conjunction with local municipalities and businesses, a sustainable and energy-efficient materials economy through cooperative materials management systems and infrastructure, in order to maximize the recovery and reuse of waste, water, wastewater, and other materials in ways that capture their economic value, conserve embedded energy, and minimize net life-cycle emissions of GHG and other pollutants.

GOAL WATER MANAGEMENT

Broward County will manage its water resources and infrastructure using a collaborative, equitable, and cost-effective integrated approach that optimizes potable water supplies, wastewater, reclaimed water, storm water, existing infrastructure, and natural systems to meet the short- and long-term needs of the County's residents, businesses, visitors, tribal communities, and the environment while addressing water management challenges associated with climate change.

POLICY WM1.6. WWS will continue to use the development review process outlined in the Broward County Land Development Code to require applicants for development permits within the Broward County utility districts to enter into an agreement to connect to existing potable water, sanitary sewer, and reclaimed facilities. When adequate facilities, based on the adopted level of service (LOS) standards, are not available and no fiscally feasible plan to construct or expand facilities is proposed, Broward County may require the developer to construct improvements to the potable water, sanitary sewer, and reclaimed water reuse systems, as necessitated by the proposed development.

POLICY WM1.11. WWS will encourage the coordination and development of North Regional Wastewater Treatment Plant regional reclaimed water projects in accordance with Florida's Ocean Outfall Law requirements, Section 403.086, F.S.

POLICY WM2.2. In order to protect and conserve the Surficial Aquifer System and limit demands on the regional water management system, the Broward County Environmental Protection and Growth Management Department (EPGMD) will continue to investigate and promote the development of alternative water supply strategies such as:

1. Continued promotion of water conservation;
2. Brackish water aquifer development;
3. Storm water capture, storage, and reuse;
4. Aquifer recharge;
5. Aquifer Storage and Recovery (ASR);
6. Reclaimed water use;
7. Improvements to the secondary canal infrastructure;
8. Additional regional surface water storage; and
9. Other technologies and management strategies consistent with the goals of the most recently adopted LECWSP Update and Countywide IWRP.

Issue #6 - Level of service standards

OBJECTIVE CI3. Implement and Regulate Infrastructure in a Sustainable Manner. Land use decisions and development orders will be issued based on the planned availability of resources to provide sufficient improvements to maintain adopted LOS.

POLICY CI3.1. Future development will bear a proportionate share of the cost of providing infrastructure required to maintain adopted LOS standards contained in other elements of this Comprehensive Plan.

POLICY CI3.2. Recommendations on proposed land use changes will be based on an analysis of infrastructure planned to support the area.

POLICY CI3.3. Development orders will be issued based on the availability of infrastructure required to maintain the adopted LOS discussed in other elements of this Comprehensive Plan.

POLICY CI3.5. Public facilities required to eliminate existing deficiencies for which the County is financially responsible will be included in the County's annually adopted five-year CIP.

POLICY CI3.6. The County will construct infrastructure necessary to maintain the adopted LOS standards as identified in the respective elements of the Broward County Comprehensive Plan.

POLICY WM4.8. WWS will continue to use the development review process outlined in the Broward County Land Development Code to require applicants for development permits within the Broward County utility districts to enter into an agreement to connect to existing potable water, sanitary sewer, and reclaimed facilities. When adequate facilities, based on the adopted LOS standards, are not available and no fiscally feasible plan to construct or expand facilities is proposed, Broward County may require the developer to construct improvements to the potable water, sanitary sewer, and reclaimed water reuse systems, as necessitated by the proposed development.

Broward County staff proposes to amend Policy WM3.1 to meet the requirements of Section 163.3164(28), F.S. regarding establishment of Level of Service Standards (LOSS). Proposed text changes appear underlined; proposed deletions appear as strikethroughs.

POLICY WM3.1. LOS standards for potable water and sanitary sewer facilities will be the FDEP permitted capacity of the facilities. The LOS standard for water treatment plants will be expressed as maximum monthly flow and the LOS standard for wastewater treatment plants will be expressed as average daily flow. <u>Facility per person levels of service standards (LOSS) may vary due to water treatment type, demographics, irrigation acreage, and age and condition of the system. For planning purposes, the maximum LOSS for any County facility shall be 150 gallons/person/day.</u>

POLICY WM3.2. Prior to approval of a building permit, Broward County Environmental Engineering and Permitting Division (EEPD) will require the appropriate water and sanitary sewer supplier(s) to submit a signed form that states whether adequate water supplies and sanitary sewer collection services will exist and be available to serve the new development no later than the anticipated date of issuance of a certificate of occupancy.

Water Management Element Support Document

Table WM-1

BCWWS Retail Potable Water Level of Service Standards

Facility	Level of Service Standard
Raw Water Supply	Maximum Day Plus In-Plant Uses
Treatment Plant	Maximum Day
Finished Water Storage	40% of Maximum Day demand to cover operational (10%) and emergency (30%) storage; plus fire protection storage of 630,000 gallons (3500 GPM for 3 hours)
Transmission/Distribution System	The most stringent of: (1) Peak Hour at 45 psi residual pressure, or (2) Maximum Day Plus Fire Flow at 25 psi residual pressure.

BCWWS Land Development Standards contain the methodology currently used to determine if the level of service standard can be met. BCWWS changes the methodology administratively from time to time as new information becomes available.

Issue # 7 - Population Projections

The following policies exist in the BrowardNEXT2.0 Comprehensive Plan:

POLICY WM1.5. Retail Water and Wastewater Master Plan will be updated to establish projected water and wastewater needs. (no mention of population projections)

Also, references are included in WME Support Document by supplier.

Other related policies include:

POLICY IC4.2. Broward County will utilize the Public Schools Staff Working Group and the School Oversight Committee to collaborate with the School Board of Broward

County, Florida, and Broward County municipalities to plan and make decisions pertaining to:

1. Population projections

2. [...]

POLICY IC5.1. Broward County shall coordinate its Potable Water Element with the South Florida Water Management District's Lower East Coast Water Supply Plan.

The 1989 Broward County Comprehensive Plan originally included policies that were located in Administration Element (Policies 1.2.1, 1.2.2.) were inadvertently deleted with the repeal of the Administration Element as part of BrowardNEXT2.0 adoption. This included the following policies:

POLICY 1.2.1. The Planning Services Division (PSD) shall continue to use the Broward County Population Forecasting Model as the methodology for generating population estimates and projections and assigning the population.

POLICY 1.2.2. The PSD shall, on at least an annual basis, provide population estimates and projections for Broward County, including the Unincorporated Area.

Broward County is in the process of adding a new Objective and related policies in the Intergovernmental Element that is anticipated to be adopted prior to the adoption of the WSFWP and states as follows:

OBJECTIVE IC10. Coordinate Broward County's Population Forecasts and Municipal Allocations with County Municipalities and Relevant Agencies.

Broward County shall continue to coordinate the allocation of population and demographic data and forecasts with County municipalities and relevant state and regional agencies.

POLICY IC10.1. Broward County's Planning and Development Management Division (PDMD) shall continue to use the Broward County Population Forecast and Allocation Model to distribute County forecasts published by University of Florida's Bureau of Economic and Business Research (BEBR) to develop local municipal and Transportation Analysis Zones (TAZs) population estimates and projections.

POLICY IC10.2. PDMD shall continue to regularly coordinate the allocation of population and demographic data and forecasts with County municipalities and relevant state and regional agencies and publish on the County's demographic data website.

POLICY IC10.3. PDMD shall, on at least an annual basis, provide population estimates for Broward County and its municipalities, including the Broward Municipal Services District, from official sources such as the US Census and BEBR.

Issue #8 - Water Supply/Source Needs and Demands

POLICY CC2.19. Broward County shall encourage local municipalities to develop policies to improve resilience to coastal and inland flooding, salt water intrusion, and other related impacts of climate change and sea level rise in their Comprehensive Plans, Sustainability Action Plans, Vision Plans, Storm Water Master Plans, Adaptation Action Areas Plans, Climate Change Plans, and other city-wide plans.

POLICY CC3.7. Broward County shall continue to support local environmental restoration, mitigation, and adaptive management initiatives, including those related to Everglades restoration, and coordinate with other State, regional, and national strategic planning efforts to improve the resiliency of natural lands and systems to climate variability and change.

POLICY CC4.8. Broward County shall create and maintain the Broward County Green Infrastructure Map Series to illustrate elements of green infrastructure identified as critical for meeting the County's goals for GHG reduction, renewable energy production, aquifer protection and surface water management, coastal habitat protection, enhanced green spaces, healthy food access, and other resource protection and health and safety goals shared by the greater Broward community.

POLICY CM1.1. Broward County shall limit the specific and cumulative impacts of development or redevelopment upon wetlands, water quality, water quantity, wildlife habitat, living marine resources, and the beach dune system through the review of development applications.

OBJECTIVE C3. Protect and Maintain Water Quality. To improve the water quality and supply throughout Broward County by protecting the County's Water Conservation Areas.

POLICY C3.5. Broward County will support projects within the Water Conservation Areas that reduce seepage losses from the Water Conservation Areas, improve water supply and quality, and establish a buffer between the Everglades and developed areas.

POLICY C6.12. Broward County shall appropriate adequate funds to provide for the enhancement, maintenance, and conservation of publicly-owned natural lands, wetland mitigation areas, and water recharge areas.

POLICY C6.13. Broward County shall pursue opportunities for the restoration and/or enhancement of degraded natural areas, including but not limited to, reforestation, restoration of shorelines or dunes, restoration of natural hydrology, or removal of non-native vegetation and prescribed burning.

POLICY C8.2. Broward County shall integrate wetlands into regional stormwater drainage/water management practices to provide necessary hydrology.

POLICY WM1.5. WWS will update the Retail Water and Wastewater Master Plan by 2026 to establish projected potable water and sanitary sewer infrastructure and facility needs through 2040 and, if required, update approximately every ten (10) years to meet state and local requirements.

OBJECTIVE WM2. Planning for Water Resources and Infrastructure. Broward County's water resources planning will be guided by the goals, objectives, and recommendations provided in Broward County's Countywide Integrated Water Resources Plan (IWRP), along with related plans that provide support for climate resilience and the long-term water resource needs of the Broward community and which further support the Comprehensive Everglades Restoration Plan (CERP), SFWMD Lower East Coast Water Supply Plan (LECWSP), and South East Florida Climate Compact's Regional Action Plan (RCAP), as updated.

POLICY WM2.5. Broward County will continuously update the future conditions map series, including wet season groundwater elevation and future condition flood elevation maps, to reflect impacts of projected sea level rise and climate change for planning and regulatory purposes.

POLICY WM2.7. Broward County will support ongoing and enhanced development of regional hydrologic models, the integration of downscaled climate data, and continuous data collection to help predict and track the impacts of sea level rise and changing rainfall patterns on groundwater levels, saltwater intrusion, and drainage infrastructure to support local planning and projects.

POLICY WM3.3. Potable water facilities will be designed, constructed, maintained, and operated with consideration given to sea level rise and in such a manner as to protect the functions of natural groundwater recharge areas, natural drainage features, and groundwater levels, without inducing the inland movement or upwelling of saline water into Underground Sources of Drinking Water (USDW), as defined in Chapter 62-528, F.A.C., and SFWMD Basis of Review for Water Use, as referenced in Chapter 40E-2, F.A.C.

POLICY WM3.4. Broward County will work to protect existing wellfields, water supplies, surface or subsurface storage facilities, control structures, water and wastewater treatment plants, and transmission infrastructure from increased coastal flooding, sea level rise, saltwater intrusion, and other potential future climate change impacts, and support utility efforts to plan infrastructure replacement and relocation, as needed.

POLICY WM3.5. Broward County will continue to coordinate with municipalities and other agencies on source-water (wellfield) monitoring and protection programs, and proactively address potential impacts on the coastal aquifer from increased chlorides due to flooding of

coastal and tidally influenced bodies of water that may occur with more intense storms, rising sea levels, increased drought, and other impacts of climate change.

POLICY WM3.6. Broward County will continue to maintain, implement, and enforce the County Wellfield Protection Ordinance (Wellfield Protection, Article XIII, Chapter 27, Broward County Code of Ordinances), will conduct wellfield inspections to locate possible contamination sources, and ensure abatement of identified sources. The County will also revise, as necessary, its Wellfield Protection Ordinance to reflect results from modeling studies and revisions to delineation criteria.

POLICY WM3.7. Broward County will continue to implement regulations governing storm water management in conjunction with the Wellfield Protection Regulations and prohibit direct storm water discharges to surface and ground water within Zone 1 and Zone 2 of wellfield zones of influence, as designated on the Wellfield Protection maps.

Issue # 9 - Intergovernmental coordination with the District, water suppliers, and other local governments. Identify any joint planning areas and joint infrastructure service areas related to water supply.

POLICY IC1.1. Broward County will coordinate with the Broward League of Cities and the Broward Legislative Delegation, as appropriate, for the following purposes: 1. Develop and implement joint infrastructure service or planning areas, especially to address issues associated with climate change and sea level rise; 2. Establish a permanent funding mechanism to support affordable housing; and 3. Support the implementation of the Low Tax Opportunity Zones, as established in the federal Tax Cut and Jobs Act of 2017, to encourage long-term investment and job creation in targeted communities by reducing taxes for many job creators. Low Tax Opportunity Zones enhance local communities' ability to attract businesses, developers and financial institutions to invest in targeted areas by allowing investors to defer capital gains taxes through investments in federally established Opportunity Funds.

OBJECTIVE IC5. Ensure Adequate Water Supply and Maintain Nature Systems Broward County shall continue to coordinate its Comprehensive Plan with the plans of other local and regional agencies to ensure adequate water supply and maintenance of natural systems.

POLICY IC5.1. Broward County shall coordinate its Potable Water Element with the South Florida Water Management District's Lower East Coast Water Supply Plan.

POLICY IC7.8. Broward County shall continue to collaborate with and support local and regional planning entities to ensure that local municipal comprehensive plans, regional strategic plans, disaster mitigation plans, water management plans, and transportation plans

are updated to provide for a sustainable environment and reflect the best available data and strategies for adapting to future climate change impacts.

OBJECTIVE IC8. Coordinate the Establishment, Maintenance, and Implementation of Capacity and Quality Level of Service Standards, Broward County shall continue to coordinate the establishment, maintenance, and implementation of capacity and quality level of service standards.

POLICY IC8.4. Broward County will participate in the Water Advisory Board, including its Technical Advisory Committee and Surface Water Coordinating Committee, to coordinate potable water, wastewater, and water management level of service standards.

POLICY WM1.3. WWS will work to provide potable water and sanitary sewer service to incorporated areas contiguous to the WWS service area when service is not anticipated to be provided by others and in the absence of legal constraints on the use of revenues.

POLICY WM2.3. Broward County will work with the SFWMD, municipalities, independent drainage districts, and neighboring counties to plan and support the development of additional regional surface water storage, including the C-51 Storage Reservoir in Palm Beach County and the water preserve areas in western Broward County under the CERP.

POLICY WM2.6. To guide and support local water resources planning, management, and investments for climate resilience, Broward County will work with local, State, and federal water management agencies and others to create, develop, and implement a suite of water resources and infrastructure planning tools, including the IWRP, the Countywide Reuse Master Plan, and regional and local hydrologic models of surface water and groundwater.

Issue # 10 - Incorporate Work Plan into Comprehensive Plan

Broward County staff proposes to amend Policy WM2.1 to meet the requirements of Chapters 163 and 373, F.S., and in this manner incorporate the Water Supply Plan by reference into the Comprehensive Plan. Proposed text changes appear underlined; proposed deletions appear as strikethroughs.

POLICY WM2.1. ~~Within eighteen (18) months of the adoption of an update to the SFWMD LECWSP, utilities located within Broward County will update and adopt their 10-Year Water Supply Facilities Work Plans, pursuant to Chapters 163 and 373 of the Florida Statutes, to incorporate the Regional Alternative Supply Plan and to evaluate water resource needs, identify water supply deficiencies, and plan for alternative water supply sources and projects to serve existing and new development within the County~~. Broward County hereby adopts by reference the Broward County Water Supply Facilities Work Plan (2020 Work Plan), dated April

21, 2020 (see Attachment A of the Water Management Element), for a planning period of not less than 10 years. The 2020 Work Plan addresses issues that pertain to water supply facilities and requirements needed to serve current and future development within the County's water service area. The County shall review and update the work plan at least every 5 years, within eighteen (18) months after the adoption of an update to the SFWMD LECWSP. Any changes to occur within the first 5 years of the work plan shall be included in the annual Capital Improvements Plan update to ensure consistency between the Water Management Element and the Capital Improvements Element.

Additional Supportive Comprehensive Plan Policies

GOAL CAPITAL IMPROVEMENTS ELEMENT

The County will provide sufficient and efficient infrastructure within its service areas to meet the standards set forth within the Comprehensive Plan elements by preserving, modifying, and replacing existing infrastructure and providing new infrastructure when required due to growth, development, and climate change impacts.

POLICY CI2.1. Broward County, in conjunction with its municipalities and partner agencies, will work to ensure that adaptation to climate change impacts, especially sea level rise, is incorporated into the planning, siting, construction, replacement, and maintenance of public infrastructure in a manner that is cost-effective and that maximizes the use of the infrastructure throughout its expected life span.

POLICY CC2.12. Broward County, in conjunction with its municipalities and partner agencies, shall make the practice of adapting the built environment to the impacts of climate change an integral component of all planning processes, including but not limited to: comprehensive planning, building codes, life-safety codes, emergency management, land development and zoning regulations, water resource management, flood control and storm water management, coastal management, and community development.

POLICY CC4.5. Broward County, in cooperation with local academic and governmental agencies, should perform a green roof pilot study to evaluate the feasibility of green roofs in Broward County and determine the appropriate plant palette, maintenance requirements, and potential water conservation benefits.

POLICY CC5.9. Broward County, through the Master Partnership Agreement with the School Board of Broward County, shall continue to support existing County and municipal education and outreach programs including, but not limited to: energy efficiency and water conservation; waste reduction and recycling; urban forests and native landscaping; and air quality and GHG reduction. The County will also support education and outreach programs on other sustainable

issues and work cooperatively to link these overlapping themes with local climate impacts in all educational materials and messages.

POLICY IC5.2. Broward County shall coordinate its Conservation Element with the Comprehensive Everglades Restoration Plan.

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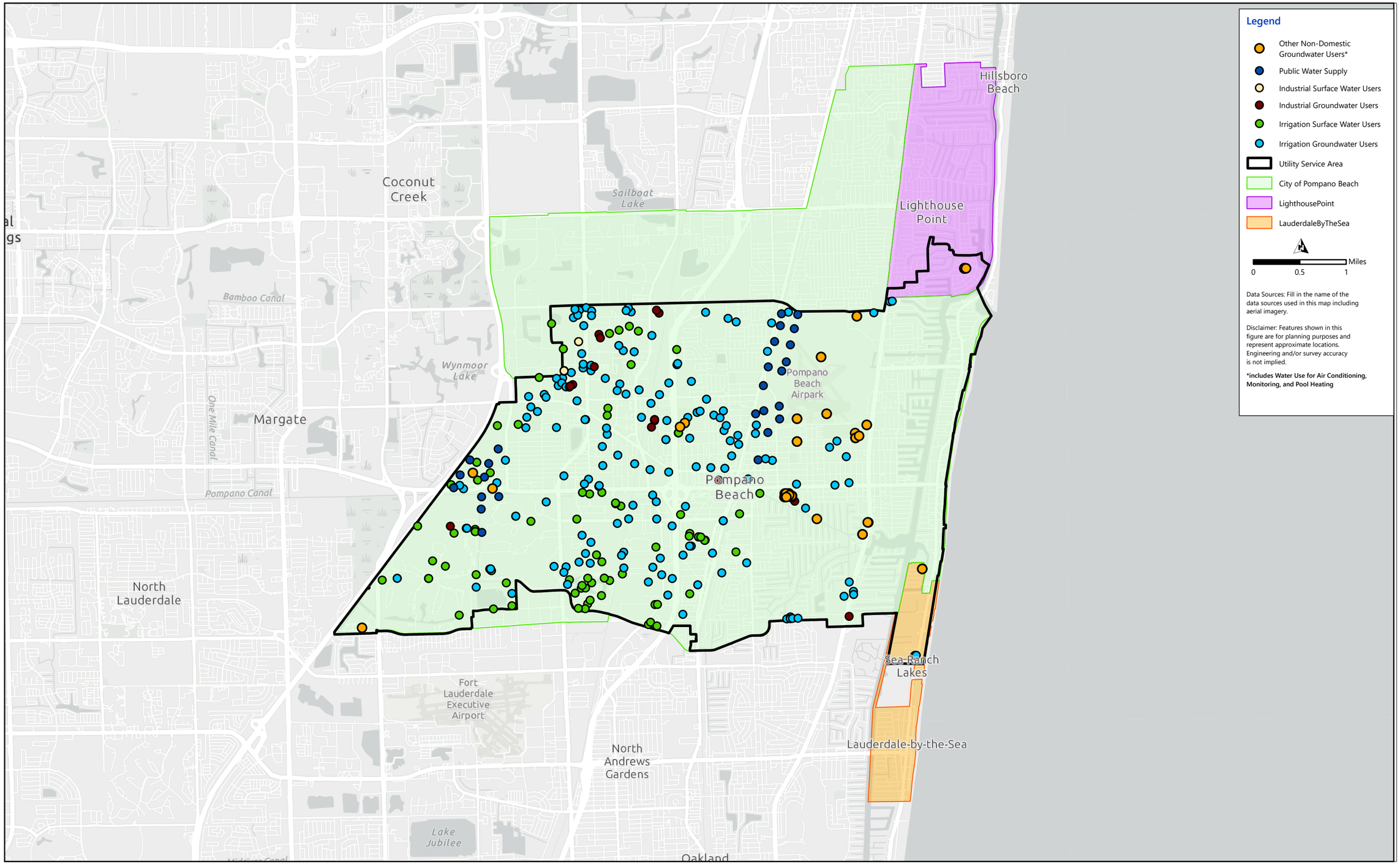
APPENDIX B

INDIVIDUAL WUP HOLDERS BY USE IN THE CITY OF POMPANO BEACH


Legend
Other Non-Domestic Groundwater Users*
Public Water Supply
Industrial Surface Water Users
Industrial Groundwater Users
Irrigation Surface Water Users
Irrigation Groundwater Users
Utility Service Area
City of Pompano Beach
LighthousePoint
LauderdaleByTheSea
N
Miles
0
0.5
1
Data Sources: Fill in the name of the data sources used in this map including aerial imagery.
Disclaimer: Features shown in this figure are for planning purposes and represent approximate locations. Engineering and/or survey accuracy is not implied.
*includes Water Use for Air Conditioning, Monitoring, and Pool Heating
Hillsboro Beach
Lighthouse Point
Coconut Creek
Sailboat Lake
Bamboo Canal
Wynmoor Lake
Pompano Beach Airpark
Margate
One Mile Canal
Pompano Canal
Pompano Beach
North Lauderdale
Sea Ranch Lakes
Fort Lauderdale Executive Airport
Lauderdale-by-the-Sea
North Andrews Gardens
Lake Jubilee
Oakland

PROJECT_NA	SOURCE_NAM	:RES_SE	ELL_DIAM	ELL_DEPT	FACINV_TYP	ACWLSTS_	FACTYPWU_C	ID	JMP_CAPA	Total Annual Allocation (MGPY)	Tota Maximum Month Allocation (MGPM)	CUP Expiration Date	Total Annual Allocation (GPD)
TRULY NOLEN	Surficial Aquifer System	0.25	3	80	WELL	E	IRRIGATION	109663	20	0.2763	0.0385	7/25/2021	757
TRULY NOLEN	Surficial Aquifer System	0.25	3	80	WELL	P	IRRIGATION	109664	20	0.2763	0.0385	7/25/2021	757
SUNTRUST BANK - BROWARD	Biscayne Aquifer	7.5	2	60	WELL	E	IRRIGATION	110778	20	8.4479	1.237	9/7/2021	23145
MT CALVARY MISSIONARY BAPTIST CHURCH	Biscayne Aquifer	2.41	4	120	WELL	P	IRRIGATION	114709	100	2.8344	0.3951	12/28/2021	7765
TERRA MAR DRAINAGE IMPROVEMENTS	Water Table aquifer	6.7	0	0	PUMP	P	MINING	283754	500			2/25/2022	
TERRA MAR DRAINAGE IMPROVEMENTS	Water Table aquifer	6.7	0	0	PUMP	P	MINING	283755	500			2/25/2022	
POMPANO BUSINESS PARK	On-site Lake(s) / Pond(s)	4	0	0	PUMP	E	IRRIGATION	116380	40	3.5283	0.4918	3/6/2022	9667
DAVID ALLEY	Biscayne Aquifer	3	2	108	WELL	P	IRRIGATION	116684	30	0.4506	0.066	3/12/2022	1235
POMPANO SPRINT METRO PCS	Biscayne Aquifer	1	2	60	WELL	P	IRRIGATION	120342	40	0.588	0.082	7/12/2022	1611
JAMES A SCARRY	Biscayne Aquifer	2	3	88	WELL	P	IRRIGATION	119840	150	2.2107	0.3082	8/2/2022	6057
ZID LIMITED IRRIGATION WELL	Biscayne Aquifer	6	2	90	WELL	E	IRRIGATION	121092	40	0.3316	0.0462	8/9/2022	908
WESTVIEW COMMUNITY CEMETERY	Surficial Aquifer System	13	3	150	WELL	P	IRRIGATION	123542	100	15.896	2.1839	11/4/2022	43551
LAGUNA POINTE	Biscayne Aquifer	6.8	4	120	WELL	P	IRRIGATION	126244	100	2.6534	0.3645	12/6/2022	7270
REGENCY GARDEN APARTMENTS	Biscayne Aquifer	4.6	4	90	WELL	P	IRRIGATION	127011	120	5.41	0.7541	12/23/2022	14822
PINE CREST SCHOOL TRANSPORTATION FACILITY	Biscayne Aquifer	1.6	2	50	WELL	E	IRRIGATION	129441	15	1.8817	0.2623	2/28/2023	5155
WALGREENS	Surficial Aquifer System	0.27	2	60	WELL	P	IRRIGATION	132548	45			5/7/2023	
JENNINGS COMMERCIAL WAREHOUSE	Biscayne Aquifer	0.23	3	80	WELL	P	IRRIGATION	133096	75	0.2542	0.0354	5/30/2023	696
MATTHEW DOUGLAS WEISSING, P.A.	Surficial Aquifer System	0.8	2	70	WELL	E	IRRIGATION	136707	34	0.8843	0.1233	8/21/2023	2423
EAGLE POINTE	Surficial Aquifer System	3.2	4	100	WELL	P	IRRIGATION	137141	100	3.7635	0.5246	8/27/2023	10311
CHEETAH III PARKING LOT ADDITION	Surficial Aquifer System	0.45	2	110	WELL	P	IRRIGATION	141744	60	0.5781	0.077	12/28/2023	1584
SOUTHTRUST BANK ATLANTIC BUSINESS CENTER	Pompano Canal	1	0	0	PUMP	P	IRRIGATION	144323	40	0.3415	0.0437	1/5/2024	936
POMPANO MARKETPLACE	Biscayne Aquifer	1.3	4	50	WELL	P	IRRIGATION	145699	80	1.6325	0.2175	1/27/2024	4473
POMPANO MARKETPLACE	Biscayne Aquifer	1.3	4	50	WELL	P	IRRIGATION	145701	80	1.6325	0.2175	1/27/2024	4473
ATLANTIC PALMS APARTMENTS	Biscayne Aquifer	2.65	4	140	WELL	P	IRRIGATION	145477	130	3.6197	0.463	1/28/2024	9917
PALM AIRE CONDO #5	SFWMD Canal (C-14)	15	0	0	PUMP	P	IRRIGATION	151117	350	19.5154	2.6811	5/17/2024	53467
PALM AIRE CONDO #5	SFWMD Canal (C-14)	15	0	0	PUMP	P	IRRIGATION	151118	350	19.5154	2.6811	5/17/2024	53467
PALM AIRE CONDO #5	SFWMD Canal (C-14)	15	0	0	PUMP	P	IRRIGATION	151121	100	19.5154	2.6811	5/17/2024	53467
CANAL POINTE PARK	Off-site Canal(s)	12.39	0	0	PUMP	E	IRRIGATION	151513	120	16.9237	2.1647	5/24/2024	46366
CANAL POINTE PARK	Off-site Canal(s)	12.39	0	0	PUMP	E	IRRIGATION	151666	120	16.9237	2.1647	5/24/2024	46366
CANAL POINTE PARK	Biscayne Aquifer	12.39	4	120	WELL	P	IRRIGATION	181777	120	16.9237	2.1647	5/24/2024	46366
CIP 04-876 AVONDALE PARK	Pompano Canal	1.52	0	0	PUMP	P	IRRIGATION	151711	110	2.0762	0.2656	5/26/2024	5688
PALM AIRE COUNTRY CLUB #II	Biscayne Aquifer	1	2	45	WELL	P	INDUSTRIAL	152360	35	0.073	0.006	7/2/2024	200
POMPANO 95 DISTRIBUTION	Surficial Aquifer System	0.25	2	80	WELL	P	IRRIGATION	157409	35	0.3139	0.0418	8/27/2024	860
MITCHELL MOORE PARK	Broward County WCD Canal System	10.3	0	0	PUMP	P	IRRIGATION	159510	250	12.9347	1.7232	10/11/2024	35438
MITCHELL MOORE PARK	Broward County WCD Canal System	10.3	0	0	PUMP	P	IRRIGATION	159511	250	12.9347	1.7232	10/11/2024	35438
MITCHELL MOORE PARK	Broward County WCD Canal System	10.3	0	0	PUMP	P	IRRIGATION	159512	35	12.9347	1.7232	10/11/2024	35438
WAREHOUSE FOR WELLINGTON REALTY	Surficial Aquifer System	0.5	2	100	WELL	P	IRRIGATION	159655	50	0.6279	0.0836	10/15/2024	1720
BUDGET	Surficial Aquifer System	2.19	3	60	WELL	P	IRRIGATION	160421	100	2.7502	0.3664	11/1/2024	7535
J D INTERNATIONAL LIGHTING	Surficial Aquifer System	1.89	3	80	WELL	P	IRRIGATION	162939	35	2.3735	0.3162	11/15/2024	6503
J D INTERNATIONAL LIGHTING	Surficial Aquifer System	1.89	4	80	WELL	P	IRRIGATION	162937	65	2.3735	0.3162	11/15/2024	6503
SUNOCO GAS & GO	Biscayne Aquifer	1.5	2	100	WELL	P	IRRIGATION	163233	55	0.519	0.0664	11/23/2024	1422
THE GARDENS NORTH MASTER ASSOCIATION INC	Surficial Aquifer System	1	2	70	WELL	P	POOL HEATING	165024	35	0.073	0.006	2/5/2025	200
DELTA TRANSFER STATION	Off-site Canal(s)	40.4	0	0	PUMP	E	INDUSTRIAL	170277	150	22.4364	2.3168	3/18/2025	61470
DELTA TRANSFER STATION	Off-site Canal(s)	40.4	0	0	PUMP	E	IRRIGATION	170278	100	22.4364	2.3168	3/18/2025	61470
DELTA TRANSFER STATION	Off-site Canal(s)	40.4	0	0	PUMP	P	IRRIGATION	277494	200	22.4364	2.3168	3/18/2025	61470
MERCEDE EXECUTIVE PARK LLC	Biscayne Aquifer	4.8	3	90	WELL	E	IRRIGATION	169689	95	1.8837	0.2509	6/10/2025	5161
ST COLEMANS CHURCH	Biscayne Aquifer	1	2	35	WELL	E	IRRIGATION	174854	90	1.2558	0.1673	6/24/2025	3441
ST COLEMANS CHURCH	Biscayne Aquifer	1	3	35	WELL	P	IRRIGATION	230694	175	1.2558	0.1673	6/24/2025	3441
CITY OF POMPANO BEACH	Surficial Aquifer System	12320	0	200	WELL	E	MONITOR	136193	0	7067	665.1	9/14/2025	19361644
CITY OF POMPANO BEACH	Surficial Aquifer System	12320	0	120	WELL	E	MONITOR	136299	0	7067	665.1	9/14/2025	19361644
CITY OF POMPANO BEACH	Surficial Aquifer System	12320	0	140	WELL	E	MONITOR	136300	0	7067	665.1	9/14/2025	19361644
CITY OF POMPANO BEACH	Surficial Aquifer System	12320	0	130	WELL	E	MONITOR	136301	0	7067	665.1	9/14/2025	19361644
CITY OF POMPANO BEACH	Surficial Aquifer System	12320	0	180	WELL	E	MONITOR	136302	0	7067	665.1	9/14/2025	19361644
CITY OF POMPANO BEACH	Surficial Aquifer System	12320	0	120	WELL	E	MONITOR	136303	0	7067	665.1	9/14/2025	19361644
CITY OF POMPANO BEACH	Surficial Aquifer System	12320	0	180	WELL	E	MONITOR	136304	0	7067	665.1	9/14/2025	19361644
CITY OF POMPANO BEACH	Surficial Aquifer System	12320	0	120	WELL	E	MONITOR	136305	0	7067	665.1	9/14/2025	19361644
CITY OF POMPANO BEACH	Surficial Aquifer System	12320	0	200	WELL	E	MONITOR	136306	0	7067	665.1	9/14/2025	19361644
CITY OF POMPANO BEACH	Surficial Aquifer System	12320	0	120	WELL	E	MONITOR	136307	0	7067	665.1	9/14/2025	19361644
CITY OF POMPANO BEACH	Surficial Aquifer System	12320	0	200	WELL	E	MONITOR	136308	0	7067	665.1	9/14/2025	19361644
CITY OF POMPANO BEACH	Surficial Aquifer System	12320	0	178	WELL	E	MONITOR	136319	0	7067	665.1	9/14/2025	19361644
CITY OF POMPANO BEACH	Surficial Aquifer System	12320	0	0	WELL	E	MONITOR	136320	0	7067	665.1	9/14/2025	19361644
CITY OF POMPANO BEACH	Surficial Aquifer System	12320	0	120	WELL	E	MONITOR	136325	0	7067	665.1	9/14/2025	19361644
CITY OF POMPANO BEACH	Surficial Aquifer System	12320	0	200	WELL	E	MONITOR	136326	0	7067	665.1	9/14/2025	19361644
CITY OF POMPANO BEACH	Surficial Aquifer System	12320	0	120	WELL	E	MONITOR	136327	0	7067	665.1	9/14/2025	19361644
CITY OF POMPANO BEACH	Surficial Aquifer System	12320	0	140	WELL	E	MONITOR	136332	0	7067	665.1	9/14/2025	19361644
CITY OF POMPANO BEACH	Surficial Aquifer System	12320	0	130	WELL	E	MONITOR	136333	0	7067	665.1	9/14/2025	19361644

COMMUNITY PARK AQUATIC CENTER (CITY OF PO	Biscayne Aquifer	1	6	110	WELL	P	POOL HEATING	178474	288	32.2368	2.6849	11/1/2025	88320
COMMUNITY PARK AQUATIC CENTER (CITY OF PO	Biscayne Aquifer	1	4	90	WELL	E	POOL HEATING	181964	80	32.2368	2.6849	11/1/2025	88320
COMMUNITY PARK AQUATIC CENTER (CITY OF PO	Biscayne Aquifer	1	4	110	WELL	P	POOL HEATING	193213	80	32.2368	2.6849	11/1/2025	88320
COMMUNITY PARK AQUATIC CENTER (CITY OF PO	Biscayne Aquifer	1	8	110	WELL	P	POOL HEATING	178476	288	32.2368	2.6849	11/1/2025	88320
TRINITY LANDINGS	Biscayne Aquifer	0.6	2	80	WELL	P	IRRIGATION	184463	60	1.0244	0.131	11/20/2025	2807
POMPANO CENTER OF COMMERCE	Biscayne Aquifer	13.95	4	50	WELL	P	IRRIGATION	287340	120			11/22/2025	
PALM AIRE	Biscayne Aquifer	1	2	120	WELL	P	IRRIGATION	187746	40	1.3659	0.1747	12/20/2025	3742
MR SQUEEKY CAR WASH	Biscayne Aquifer	0.58	2	75	WELL	P	INDUSTRIAL	189333	65	8.7127	0.1013	2/3/2026	23870
PENTA'S STORAGE YARD	Biscayne Aquifer	1	2	90	WELL	P	IRRIGATION	189657	50	1.2558	0.1673	2/6/2026	3441
COASTAL EIGHTEEN	Unnamed Canal	0.9	3	0	PUMP	E	INDUSTRIAL	102257	100			2/28/2026	
COASTAL EIGHTEEN	Unnamed Canal	0.9	0	0	PUMP	E	INDUSTRIAL	281264	100			2/28/2026	
COASTAL EIGHTEEN	Unnamed Canal	0.9	0	0	PUMP	E	INDUSTRIAL	281265	100			2/28/2026	
ROYAL POINT AT PALM AIRE	On-site Lake(s) / Pond(s)	6.43	4	0	PUMP	P	IRRIGATION	182843	80	8.0748	1.0757	4/1/2026	22123
GARDEN ISLES APARTMENTS 2	Biscayne Aquifer	1	3	100	WELL	P	AIR CONDITIONIN	190582	0	9.125	0.76	4/4/2026	25000
GARDEN ISLES APARTMENTS 2	Biscayne Aquifer	1	4	60	WELL	P	AIR CONDITIONIN	224585	65	9.125	0.76	4/4/2026	25000
GARDEN ISLES APARTMENTS 2	Biscayne Aquifer	1	3	100	WELL	P	AIR CONDITIONIN	190583	0	9.125	0.76	4/4/2026	25000
HUNTERS MANOR PARK	Biscayne Aquifer	8.25	6	100	WELL	P	IRRIGATION	191379	225	10.3603	1.3802	4/9/2026	28384
ORCHID GROVE	On-site Lake(s)	9.7	0	0	PUMP	P	IRRIGATION	191332	400	13.2494	1.6947	4/22/2026	36300
ATLANTIC WEST, MARGATE, FOREST HILLS, MARK	Surficial Aquifer System	17.6	4	80	WELL	E	IRRIGATION	191956	120	22.742	2.9862	7/31/2026	62307
ATLANTIC BUSINESS CENTER	On-site Lake(s) / Pond(s)	17.8	0	0	PUMP	E	IRRIGATION	42520	158	22.3532	2.9779	9/19/2026	61242
ATLANTIC BUSINESS CENTER	On-site Lake(s)	17.8	0	0	PUMP	E	IRRIGATION	193585	350	22.3532	2.9779	9/19/2026	61242
ATLANTIC BUSINESS CENTER	On-site Lake(s)	17.8	0	0	PUMP	E	IRRIGATION	193586	75	22.3532	2.9779	9/19/2026	61242
ATLANTIC BUSINESS CENTER	On-site Lake(s)	17.8	0	0	PUMP	E	IRRIGATION	193587	125	22.3532	2.9779	9/19/2026	61242
ATLANTIC BUSINESS CENTER	On-site Lake(s)	17.8	0	0	PUMP	E	IRRIGATION	193588	200	22.3532	2.9779	9/19/2026	61242
HESS GAS STATION	Biscayne Aquifer	1	2	70	WELL	P	IRRIGATION	195425	55	0.683	0.0874	12/16/2026	1871
OAKS AND CYPRESS COURSES	On-site Lake(s)	260	0	0	PUMP	E	IRRIGATION	41035	750	355.1383	45.4247	2/15/2027	972982
OAKS AND CYPRESS COURSES	On-site Lake(s)	260	0	0	PUMP	E	IRRIGATION	41036	300	355.1383	45.4247	2/15/2027	972982
OAKS AND CYPRESS COURSES	Biscayne Aquifer	260	10	80	WELL	E	IRRIGATION	27071	0			2/15/2027	
OAKS AND CYPRESS COURSES	Biscayne Aquifer	260	6	80	WELL	E	IRRIGATION	27072	0			2/15/2027	
OAKS AND CYPRESS COURSES	Biscayne Aquifer	260	10	80	WELL	E	IRRIGATION	27073	0			2/15/2027	
OAKS AND CYPRESS COURSES	On-site Lake(s)	260	0	0	PUMP	E	IRRIGATION	41033	0			2/15/2027	
OAKS AND CYPRESS COURSES	On-site Lake(s)	260	0	0	PUMP	E	IRRIGATION	41034	0			2/15/2027	
CYPRESS PARK CONDOMINIUM	Pompano Canal	2	0	0	PUMP	E	IRRIGATION	195686	220	2.7318	0.3494	2/17/2027	7484
GARDEN ISLES	Biscayne Aquifer	1	4	60	WELL	P	AIR CONDITIONIN	196843	68.5	36.0036	2.9592	3/11/2027	98640
GARDEN ISLES	Biscayne Aquifer	1	4	60	WELL	P	AIR CONDITIONIN	196844	68.5	36.0036	2.9592	3/11/2027	98640
GARDEN ISLES	Biscayne Aquifer	1	4	60	WELL	E	AIR CONDITIONIN	196841	0	36.0036	2.9592	3/11/2027	98640
GARDEN ISLES	Biscayne Aquifer	1	4	60	WELL	E	AIR CONDITIONIN	196845	0	36.0036	2.9592	3/11/2027	98640
GARDEN ISLES	Surficial Aquifer System	1	2	55	WELL	E	AIR CONDITIONIN	263287	0	36.0036	2.9592	3/11/2027	98640
GARDEN ISLES	Surficial Aquifer System	1	2	60	WELL	P	AIR CONDITIONIN	263288	45	36.0036	2.9592	3/11/2027	98640
GARDEN ISLES	Surficial Aquifer System	1	2	55	WELL	E	AIR CONDITIONIN	263289	0	36.0036	2.9592	3/11/2027	98640
CRYSTAL SUB MODIFICATION	Biscayne Aquifer	4.2	2	60	WELL	E	IRRIGATION	196414	50	24.5371	3	3/24/2027	67225
CRYSTAL SUB MODIFICATION	Biscayne Aquifer	4.2	2	60	WELL	E	IRRIGATION	196416	50	24.5371	3	3/24/2027	67225
CRYSTAL SUB MODIFICATION	Biscayne Aquifer	4.2	2	60	WELL	E	IRRIGATION	196423	50	24.5371	3	3/24/2027	67225
WORLD OF GRANITE	Biscayne Aquifer	0.5	2	40	WELL	P	IRRIGATION	196486	100	0.6279	0.0836	3/26/2027	1720
MITCHELL MOORE PARK	Biscayne Aquifer	1	6	100	WELL	P	POOL HEATING	212934	135			5/26/2027	
MITCHELL MOORE PARK	Biscayne Aquifer	1	6	100	WELL	P	POOL HEATING	212935	0			5/26/2027	
ASUMPTION CHURCH	Water Table Aquifer	1	2	20	WELL	P	IRRIGATION	198763	80	2.4092	0.3501	7/1/2027	6601
ASUMPTION CHURCH	Water Table Aquifer	1	2	20	WELL	P	IRRIGATION	198764	80	2.4092	0.3501	7/1/2027	6601
TURENNE WELL	Biscayne Aquifer	1	3	50	WELL	P	IRRIGATION	214080	100	1.2558	0.1673	7/13/2027	3441
BENNETT, SAWGRASS, PARK LAKES ELEM/CHARL	Biscayne Aquifer	16.5	4	80	WELL	E	IRRIGATION	214693	300	20.5867	2.8854	7/16/2027	56402
ANDREWS COMMERCENTER	Unnamed Canal	0.5	0	0	PUMP	E	IRRIGATION	214519	36	0.6279	0.0836	8/3/2027	1720
ANDREWS COMMERCENTER	Unnamed Canal	0.5	0	0	PUMP	E	IRRIGATION	214521	36	0.6279	0.0836	8/3/2027	1720
ATLANTIC VOCATIONAL & POMPANO BEACH MIDDI	Biscayne Aquifer	16.5	4	80	WELL	E	IRRIGATION	214815	150	20.1065	2.7917	8/4/2027	55086
ATLANTIC VOCATIONAL & POMPANO BEACH MIDDI	Biscayne Aquifer	16.5	4	80	WELL	E	IRRIGATION	214816	120	20.1065	2.7917	8/4/2027	55086
LIVE! RESORTS POMPANO LAKE IMPROVEMENTS	Biscayne Aquifer	22.69	4	80	WELL	A	IRRIGATION	31658	0			9/14/2027	
LIVE! RESORTS POMPANO LAKE IMPROVEMENTS	Biscayne Aquifer	22.69	2	80	WELL	A	IRRIGATION	31662	0			9/14/2027	
LIVE! RESORTS POMPANO LAKE IMPROVEMENTS	Biscayne Aquifer	22.69	4	80	WELL	A	IRRIGATION	31657	0			9/14/2027	
LIVE! RESORTS POMPANO LAKE IMPROVEMENTS	Biscayne Aquifer	22.69	4	80	WELL	A	IRRIGATION	31660	0			9/14/2027	
LIVE! RESORTS POMPANO LAKE IMPROVEMENTS	Biscayne Aquifer	22.69	6	80	WELL	E	IRRIGATION	265933	200	79.4799	10.9194	9/14/2027	217753
LIVE! RESORTS POMPANO LAKE IMPROVEMENTS	Biscayne Aquifer	22.69	2	80	WELL	A	IRRIGATION	265934	0			9/14/2027	
LIVE! RESORTS POMPANO LAKE IMPROVEMENTS	Biscayne Aquifer	22.69	3	80	WELL	P	IRRIGATION	291327	150			9/14/2027	
LIVE! RESORTS POMPANO LAKE IMPROVEMENTS	On-site Lake	22.69	0	0	PUMP	P	IRRIGATION	295913	150			9/14/2027	
ROYAL PALM COMMERCE PARK	Biscayne Aquifer	5.66	3	70	WELL	P	IRRIGATION	214937	100	7.7311	0.9889	9/28/2027	21181
GOLDEN ACRES	On-site Lake(s) / Pond(s)	13.6	0	0	PUMP	P	IRRIGATION	216821	155	12.2979	1.9632	11/10/2027	33693
GOLDEN ACRES	On-site Lake(s) / Pond(s)	13.6	0	0	PUMP	P	IRRIGATION	216822	155	12.2979	1.9632	11/10/2027	33693
SAINT HENRYS CATHOLIC CHURCH	SFWMD Canal (C-14)	1	0	0	PUMP	E	IRRIGATION	217255	50	1.2558	0.1673	11/24/2027	3441
SAINT HENRYS CATHOLIC CHURCH	SFWMD Canal (C-14)	1	0	0	PUMP	E	IRRIGATION	217256	50	1.2558	0.1673	11/24/2027	3441
SAINT HENRYS CATHOLIC CHURCH	SFWMD Canal (C-14)	1	0	0	PUMP	E	IRRIGATION	217257	50	1.2558	0.1673	11/24/2027	3441
WESTGATE CENTER	Off-site Canal(s)	2	0	0	PUMP	E	IRRIGATION	218161	100	2.5116	0.3346	12/3/2027	6881
WAL MART SUPERCENTER STORE 2962	On-site Lake(s) / Pond(s)	8	0	0	PUMP	E	IRRIGATION	218036	120	10.0464	1.3384	12/24/2027	27524

SUNKISS NURSERY	Surficial Aquifer System	1.3	4	26	WELL	E	IRRIGATION	218591	125	1.1399	0.1519	1/28/2028	3123
POMPANO BEACH READY-MIX BATCH PLANT	Biscayne Aquifer	14.3	4	80	WELL	E	INDUSTRIAL	219118	475	31.025	2.584	2/5/2028	85000
POMPANO BEACH READY-MIX BATCH PLANT	Biscayne Aquifer	14.3	2	40	WELL	E	INDUSTRIAL	219119	200	31.025	2.584	2/5/2028	85000
POMPANO BEACH READY-MIX BATCH PLANT	Biscayne Aquifer	14.3	4	100	WELL	A	INDUSTRIAL	219120	0	31.025	2.584	2/5/2028	85000
POMPANO BEACH READY-MIX BATCH PLANT	Biscayne Aquifer	14.3	6	100	WELL	P	INDUSTRIAL	281040	200	31.025	2.584	2/5/2028	85000
FLORIDA POWER AND LIGHT ANDREWS SUBSTATI	Biscayne Aquifer	10.88	4	60	WELL	E	IRRIGATION	197892	100	14.8611	1.9008	2/12/2028	40715
CROSS CREEK/CRESTHAVEN/CYPRESS ELEM/CR\	Biscayne Aquifer	17.25	6	80	WELL	E	IRRIGATION	218734	150	22.571	2.947	2/15/2028	61838
CROSS CREEK/CRESTHAVEN/CYPRESS ELEM/CR\	Biscayne Aquifer	17.25	3	80	WELL	E	IRRIGATION	218731	100	22.571	2.947	2/15/2028	61838
GATEWAY COMMERCE CENTER	Biscayne Aquifer	0.07	2	80	WELL	P	IRRIGATION	220541	60	0.0879	0.0117	4/15/2028	241
FSR MATERIAL RECOVERY FACILITY	Biscayne Aquifer	1	6	100	WELL	P	IRRIGATION	222481	120	0.9293	0.1238	6/10/2028	2546
LG L RECYCLING	Biscayne Aquifer	1	6	90	WELL	P	INDUSTRIAL	222932	120	1.825	0.15	7/4/2028	5000
GARDEN POINT CONDOMINIUM	Biscayne Aquifer	1	6	74	WELL	E	INDUSTRIAL	25562	140	73.58	6.1286	11/4/2028	201589
DELTA POMPANO SOUTH	Biscayne Aquifer	0.25	3	88	WELL	E	IRRIGATION	230410	50	1.2264	0.1178	7/25/2029	3360
PUBLIC STORAGE	Biscayne Aquifer	0.5	4	55	WELL	E	IRRIGATION	7477	50	0.683	0.0874	7/26/2029	1871
EXTRA SECURE SELF STORAGE	Biscayne Aquifer	1.5	3	180	WELL	P	IRRIGATION	230342	60	1.2046	0.1751	10/7/2029	3300
TRUCK STAGING	Biscayne Aquifer	2.71	2	50	WELL	E	IRRIGATION	231398	75	3.4032	0.4534	10/19/2029	9324
NORTH AREA BUS FACILITY	Broward County WCD Canal System	1.04	0	0	PUMP	E	IRRIGATION	36271	85	1.306	0.174	11/30/2029	3578
AMERIGAS	Biscayne Aquifer	2.5	4	70	WELL	P	IRRIGATION	253221	90	3.1395	0.4182	1/11/2030	8601
SOCCER FIELD	Biscayne Aquifer	0.6	3	80	WELL	P	IRRIGATION	253284	65	0.8195	0.1048	1/19/2030	2245
ANDREWS COMMERCIAL CENTER	Surficial Aquifer System	0.6	2	80	WELL	P	IRRIGATION	253740	55	0.7228	0.105	3/21/2030	1980
BLANCHE ELY HIGH SCHOOL - STADIUM	Surficial Aquifer System	14.78	10	80	WELL	E	IRRIGATION	29647	350	20.1882	2.5822	3/22/2030	55310
BLANCHE ELY HIGH SCHOOL - STADIUM	Surficial Aquifer System	14.78	6	60	WELL	E	IRRIGATION	29648	300	20.1882	2.5822	3/22/2030	55310
BLANCHE ELY HIGH SCHOOL - STADIUM	Surficial Aquifer System	14.78	8	40	WELL	P	IRRIGATION	253938	250	20.1882	2.5822	3/22/2030	55310
PALM AIRE CONDOMINIUM 11	SFWMD Canal (C-14)	23.5	0	0	PUMP	E	IRRIGATION	128926	350	21.8273	2.7919	6/1/2030	59801
BOBCAT OF BROWARD	Biscayne Aquifer	1	2	100	WELL	E	IRRIGATION	255304	60	1.2558	0.1673	7/16/2030	3441
15TH AVE STORAGE (WAREHOUSES)	Biscayne Aquifer	0.12	3	70	WELL	P	IRRIGATION	257580	100	0.1506	0.0228	10/9/2030	413
PINE DRIVE MANOR	Biscayne Aquifer	1	4	60	WELL	P	AIR CONDITIONIN	257675	150	34.992	2.916	10/15/2030	95868
LIGHTHOUSE BAY A/C SUPPLY WELL	Biscayne Aquifer	1	2	45	WELL	P	AIR CONDITIONIN	256667	40	21.024	1.751	10/23/2030	57600
LIGHTHOUSE BAY A/C SUPPLY WELL	Biscayne Aquifer	1	2	40	WELL	E	AIR CONDITIONIN	256668	40	21.024	1.751	10/23/2030	57600
LIGHTHOUSE BAY A/C SUPPLY WELL	Biscayne Aquifer	1	2	40	WELL	E	AIR CONDITIONIN	256670	40	21.024	1.751	10/23/2030	57600
FOREST LAWN NORTH	Biscayne Aquifer	34.5	6	100	WELL	E	IRRIGATION	14602	300	35.5138	4.5425	12/23/2030	97298
FOREST LAWN NORTH	Biscayne Aquifer	34.5	8	100	WELL	E	IRRIGATION	24453	500	35.5138	4.5425	12/23/2030	97298
CAPTIVA COVE	On-site Lake(s) / Pond(s)	1	0	0	PUMP	P	IRRIGATION	258369	180	7.7038	0.9854	12/23/2030	21106
HOUSE OF GOD - POMPANO	Surficial Aquifer System	2.5	3	100	WELL	P	IRRIGATION	258373	100	3.1395	0.4182	1/25/2031	8601
ALLEGIANCE CRANE AND EQUIPMENT	Biscayne Aquifer	1.94	3	90	WELL	P	IRRIGATION	258682	50	2.4362	0.3246	2/24/2031	6675
CHARLES DREW ELEMENTARY SCHOOL	Biscayne Aquifer	4.5	6	120	WELL	E	IRRIGATION	9276	440	5.6511	0.7528	7/13/2031	15482
CHARLES DREW ELEMENTARY SCHOOL	Broward County WCD Canal System	4.5	0	0	PUMP	E	IRRIGATION	36490	150	5.6511	0.7528	7/13/2031	15482
JOSEPH KRAUS	Biscayne Aquifer	1	2	80	WELL	P	IRRIGATION	260221	50	1.2505	0.1751	9/9/2031	3426
PINK PONY POMPANO	Broward County WCD Canal System	1	0	0	PUMP	E	IRRIGATION	260355	60	1.3613	0.1881	9/28/2031	3730
ISLAMIC CENTER OF SOUTH FLORIDA	Biscayne Aquifer	2.29	3	80	WELL	P	IRRIGATION	222137	150	2.8636	0.4009	11/9/2031	7845
POMPANO SUB STATION	Biscayne Aquifer	1.1	2	90	WELL	E	IRRIGATION	260893	60	1.3756	0.1926	12/1/2031	3769
POMPANO MERCHANDISE MART I I	Biscayne Aquifer	1.25	2	100	WELL	E	IRRIGATION	261293	60	1.7017	0.2352	12/24/2031	4662
POMPANO MERCHANDISE MART I I	Biscayne Aquifer	1.25	2	100	WELL	E	IRRIGATION	261294	50	1.7017	0.2352	12/24/2031	4662
V C A ANIMAL HOSPITAL	Biscayne Aquifer	0.2	2	80	WELL	E	IRRIGATION	262309	0	0.2723	0.0376	5/3/2032	746
V C A ANIMAL HOSPITAL	Biscayne Aquifer	0.2	2	80	WELL	P	IRRIGATION	262310	60	0.2723	0.0376	5/3/2032	746
PALMS GOLF COURSE AT PALM AIRE COUNTRY CI	Biscayne Aquifer	120	10	127	WELL	E	IRRIGATION	28401	606	163.3594	22.5747	5/14/2032	447560
PALMS GOLF COURSE AT PALM AIRE COUNTRY CI	On-site Lake(s)	120	0	0	PUMP	E	IRRIGATION	41538	750	163.3594	22.5747	5/14/2032	447560
PALMS GOLF COURSE AT PALM AIRE COUNTRY CI	On-site Lake(s)	120	0	0	PUMP	E	IRRIGATION	41539	750	163.3594	22.5747	5/14/2032	447560
PALMS GOLF COURSE AT PALM AIRE COUNTRY CI	On-site Lake(s)	120	0	0	PUMP	E	IRRIGATION	261186	750	163.3594	22.5747	5/14/2032	447560
CYPRESS BEND PROTECTIVE CORPORATION	On-site Lake(s)	15	0	0	PUMP	E	IRRIGATION	197235	150	20.4199	2.8218	6/17/2032	55945
CYPRESS BEND PROTECTIVE CORPORATION	On-site Lake(s)	15	0	0	PUMP	E	IRRIGATION	197236	200	20.4199	2.8218	6/17/2032	55945
CYPRESS BEND PROTECTIVE CORPORATION	On-site Lake(s)	15	0	0	PUMP	E	IRRIGATION	197237	200	20.4199	2.8218	6/17/2032	55945
CYPRESS BEND PROTECTIVE CORPORATION	On-site Lake(s)	15	0	0	PUMP	E	IRRIGATION	197241	150	20.4199	2.8218	6/17/2032	55945
CYPRESS BEND PROTECTIVE CORPORATION	On-site Lake(s)	15	0	0	PUMP	E	IRRIGATION	197242	150	20.4199	2.8218	6/17/2032	55945
CYPRESS BEND PROTECTIVE CORPORATION	SFWMD Canal (C-14)	15	0	0	PUMP	E	IRRIGATION	197243	150	20.4199	2.8218	6/17/2032	55945
CYPRESS BEND PROTECTIVE CORPORATION	SFWMD Canal (C-14)	15	0	0	PUMP	E	IRRIGATION	197244	150	20.4199	2.8218	6/17/2032	55945
CYPRESS BEND PROTECTIVE CORPORATION	On-site Lake(s)	15	0	0	PUMP	E	IRRIGATION	197245	250	20.4199	2.8218	6/17/2032	55945
CYPRESS BEND PROTECTIVE CORPORATION	On-site Lake(s)	15	0	0	PUMP	E	IRRIGATION	197246	250	20.4199	2.8218	6/17/2032	55945
CYPRESS BEND PROTECTIVE CORPORATION	On-site Lake(s)	15	0	0	PUMP	E	IRRIGATION	197247	200	20.4199	2.8218	6/17/2032	55945
CYPRESS BEND PROTECTIVE CORPORATION	On-site Lake(s)	15	0	0	PUMP	E	IRRIGATION	197248	100	20.4199	2.8218	6/17/2032	55945
CYPRESS BEND PROTECTIVE CORPORATION	On-site Lake(s)	15	0	0	PUMP	E	IRRIGATION	197249	250	20.4199	2.8218	6/17/2032	55945
CYPRESS BEND PROTECTIVE CORPORATION	On-site Lake(s)	15	0	0	PUMP	E	IRRIGATION	197250	200	20.4199	2.8218	6/17/2032	55945
CYPRESS BEND PROTECTIVE CORPORATION	On-site Lake(s)	15	0	0	PUMP	E	IRRIGATION	197251	200	20.4199	2.8218	6/17/2032	55945
AYCO GROUP L L C NEW DISTRIBUTION CENTER	Biscayne Aquifer	2.02	4	90	WELL	P	IRRIGATION	262559	60	2.7499	0.38	6/27/2032	7534
731 HAMMONDVILLE ROAD	Biscayne Aquifer	1.25	3	80	WELL	P	IRRIGATION	262692	70	1.5631	0.2188	6/29/2032	4282
CONDO 2	Biscayne Aquifer	9	6	120	WELL	P	IRRIGATION	263398	140	12.252	1.6931	9/19/2032	33567
Palm Aire	Biscayne Aquifer	2.3	4	120	WELL	E	IRRIGATION	263987	0			12/10/2032	
Palm Aire	Off-site Lake(s)	2.3	0	0	PUMP	P	IRRIGATION	286431	100			12/10/2032	
S W S SHREDDER FACILITY	Biscayne Aquifer	2.843	4	50	WELL	P	INDUSTRIAL	264181	50	0.9125	0.152	1/11/2033	2500
NATMI TRUCK TERMINAL	Broward County WCD Canal System	1.2	0	0	PUMP	P	IRRIGATION	264811	75	1.6336	0.2257	2/19/2033	4476

SILVERSTEIN DR OFFICE	Biscayne Aquifer	0.3	2	40	WELL	P	IRRIGATION	264812	20	0.4084	0.0564	2/19/2033	1119
GOLD COAST PLAT	Biscayne Aquifer	0.39	2	75	WELL	P	IRRIGATION	264779	60	0.4877	0.0683	2/22/2033	1336
MY STORAGE BIN LLC	Biscayne Aquifer	1.35	3	70	WELL	P	IRRIGATION	265420	65	1.8387	0.254	5/3/2033	5038
RITZ SAFETY	Surficial Aquifer System	1.2	3	80	WELL	P	IRRIGATION	265497	75	1.634	0.226	5/15/2033	4477
ST JOSEPH HAITIAN MISSION	Biscayne Aquifer	5.53	2	75	WELL	E	IRRIGATION	265105	50	7.5281	1.0403	6/28/2033	20625
ENTERPRISE TRUCK	Biscayne Aquifer	0.49	3	90	WELL	P	IRRIGATION	265835	45	0.6127	0.0858	7/8/2033	1679
ENTERPRISE TRUCK	Surficial Aquifer System	0.49	4	100	WELL	A	IRRIGATION	256135	0			7/8/2033	
Highland Oaks	Biscayne Aquifer	10.75	4	60	WELL	E	IRRIGATION	266556	150	6.29	0.8806	9/20/2033	17233
Highland Oaks	Biscayne Aquifer	10.75	4	60	WELL	E	IRRIGATION	266557	100	6.29	0.8806	9/20/2033	17233
POMPANO RETAIL CENTER	Biscayne Aquifer	6.32	2	100	WELL	P	IRRIGATION	129357	0	0.6355	0.0885	3/24/2034	1741
POMPANO RETAIL CENTER	Biscayne Aquifer	6.32	2	100	WELL	P	IRRIGATION	267876	78	0.6355	0.0885	3/24/2034	1741
250 NORTH POWERLINE ROAD	Biscayne Aquifer	1	2	50	WELL	P	IRRIGATION	267879	25	0.681	0.0941	3/25/2034	1866
G B REAL ESTATE	Biscayne Aquifer	0.37	2	80	WELL	P	IRRIGATION	196981	50	0.2724	0.0376	6/3/2034	746
VALENTI BUS PARCEL	Biscayne Aquifer	0.45	2	66	WELL	P	IRRIGATION	268302	50	0.5629	0.0788	6/6/2034	1542
SIMONIZ CAR WASH - 1500 SOUTH FEDERAL HIGH	Biscayne Aquifer	0.68	4	50	WELL	E	INDUSTRIAL	269667	60	2.0752	0.2022	11/7/2034	5685
POMPANO BEACH ELEMENTARY SCHOOL AND PC	Biscayne Aquifer	11.5	10	60	WELL	E	IRRIGATION	29680	300	2.96	2.9557	2/19/2035	8110
POMPANO BEACH ELEMENTARY SCHOOL AND PC	Biscayne Aquifer	11.5	8	95	WELL	E	IRRIGATION	167122	180	2.96	2.9557	2/19/2035	8110
POMPANO BEACH ELEMENTARY SCHOOL AND PC	Biscayne Aquifer	11.5	8	63	WELL	E	IRRIGATION	2197	200	2.96	2.9557	2/19/2035	8110
VIZCAYA	Biscayne Aquifer	5.44	6	110	WELL	E	IRRIGATION	5589	130	7.4095	1.0234	3/3/2035	20300
VIZCAYA	Off-site Canal(s)	5.44	0	0	PUMP	E	IRRIGATION	270365	200	7.4095	1.0234	3/3/2035	20300
RESIDENCES AT PALM AIRE	On-site Lake(s)	26.84	0	0	PUMP	P	IRRIGATION	271057	250	12.5541	1.7657	6/4/2035	34395
ST ANDREWS AT PALM AIRE	Off-site Lake(s)	3.94	0	0	PUMP	E	IRRIGATION	35324	130	5.6153	0.7704	6/23/2035	15384
STROBES R US	Biscayne Aquifer	0.73	2	50	WELL	P	IRRIGATION	272852	30	0.9943	0.1373	11/23/2035	2724
901 PINE DRIVE	Biscayne Aquifer	0.35	2	50	WELL	P	IRRIGATION	273480	60	0.4767	0.0658	3/14/2036	1306
ATLANTICO AT PALM AIRE	Surficial Aquifer System	9.99	6	120	WELL	P	IRRIGATION	273631	150	4.6173	0.6377	4/6/2036	12650
CEMEX - NORTH POMPANO READY-MIX AND BLOC	Biscayne Aquifer	12.4	6	60	WELL	A	INDUSTRIAL	230800	0			6/1/2036	
CEMEX - NORTH POMPANO READY-MIX AND BLOC	Biscayne Aquifer	12.4	6	60	WELL	A	INDUSTRIAL	230802	0			6/1/2036	
CEMEX - NORTH POMPANO READY-MIX AND BLOC	Biscayne Aquifer	12.4	12	150	WELL	E	INDUSTRIAL	273393	200	18.25	2.736	6/1/2036	50000
COVERED CANOPY	Surficial Aquifer System	0.83	2	60	WELL	P	IRRIGATION	274248	80	1.1305	0.1561	6/22/2036	3097
CITY VISTA MIXED USE DEVELOPMENT	Biscayne Aquifer	2.41	4	100	WELL	P	IRRIGATION	274351	100	0.763	0.1068	7/13/2036	2090
PALM AIRE - PHASE I I I	On-site Lake(s)	36.28	0	0	PUMP	P	IRRIGATION	274541	75	20.6757	2.8557	8/16/2036	56646
PALM AIRE - PHASE I I I	On-site Lake(s)	36.28	0	0	PUMP	P	IRRIGATION	274542	75	20.6757	2.8557	8/16/2036	56646
PALM AIRE - PHASE I I I	On-site Lake(s)	36.28	0	0	PUMP	P	IRRIGATION	274543	75	20.6757	2.8557	8/16/2036	56646
PALM AIRE - PHASE I I I	On-site Lake(s)	36.28	0	0	PUMP	P	IRRIGATION	274544	75	20.6757	2.8557	8/16/2036	56646
PALM AIRE - PHASE I I I	On-site Lake(s)	36.28	0	0	PUMP	P	IRRIGATION	274545	75	20.6757	2.8557	8/16/2036	56646
PALM AIRE - PHASE I I I	On-site Lake(s)	36.28	0	0	PUMP	P	IRRIGATION	274546	75	20.6757	2.8557	8/16/2036	56646
FAIRVIEW POINTE AT PALM AIRE	On-site Lake(s)	13	0	0	PUMP	E	IRRIGATION	40070	125	17.7064	2.4456	1/10/2037	48511
CYPRESS ASSOCIATES	Biscayne Aquifer	0.43	2	50	WELL	P	IRRIGATION	276190	40	0.3867	0.0574	3/14/2037	1059
1ST HAITIAN BAPTIST CHURCH	Biscayne Aquifer	0.5	2	100	WELL	P	IRRIGATION	276589	35	0.6254	0.0875	5/2/2037	1713
OCEAN BAY STORAGE YARD	Biscayne Aquifer	0.7	2	110	WELL	P	IRRIGATION	216154	45	0.8756	0.1225	7/7/2037	2399
FRED STEVENS TREE COMPANY	Biscayne Aquifer	0.75	2	100	WELL	P	IRRIGATION	277441	50	0.6254	0.0875	8/25/2037	1713
TOP SELF STORAGE	Biscayne Aquifer	2.28	4	100	WELL	P	IRRIGATION	278099	85	2.8519	0.3991	12/13/2037	7813
FLEXSOL PACKAGING	Biscayne Aquifer	1	3	36	WELL	P	IRRIGATION	278273	15	1.2509	0.1751	1/30/2038	3427
RICK CASE HABITAT	Surficial Aquifer System	1.16	3	80	WELL	P	IRRIGATION	278609	75	1.58	0.2182	3/2/2038	4329
PALM AIRE COUNTRY CLUB CONDOMINIUM NO 8	Off-site Canal(s)	1	0	0	PUMP	P	IRRIGATION	278734	100	17.7064	2.4456	3/20/2038	48511
NORTH BROWARD DETENTION CENTER	On-site Canal(s)	8.42	0	0	PUMP	E	IRRIGATION	41077	200	11.4683	1.584	3/29/2038	31420
LINCOLN PARK NORTH	Biscayne Aquifer	2	2	100	WELL	P	IRRIGATION	279126	100	2.7241	0.3762	5/4/2038	7463
PCC 16TH STREET LOGISTICS	Biscayne Aquifer	2	3	110	WELL	P	IRRIGATION	279359	100	2.5017	0.3501	6/8/2038	6854
CAPITAL SCRAP METAL	Biscayne Aquifer	6	4	100	WELL	P	IRRIGATION	279449	50	1.2509	0.1751	6/22/2038	3427
O'CONNER HOLDING PROPERTY IRRIGATION	On-site Lake(s)	1.84	0	0	PUMP	P	IRRIGATION	279539	55	3.0896	0.4324	7/2/2038	8465
BOARDWALK APARTMENTS	Biscayne Aquifer	0.2	2	65	WELL	P	IRRIGATION	279673	50	1.501	0.2101	7/24/2038	4112
BOARDWALK APARTMENTS	Biscayne Aquifer	0.2	2	65	WELL	P	IRRIGATION	279674	50	1.501	0.2101	7/24/2038	4112
BOARDWALK APARTMENTS	Biscayne Aquifer	0.2	2	65	WELL	P	IRRIGATION	280791	50	1.501	0.2101	7/24/2038	4112
BOARDWALK APARTMENTS	Biscayne Aquifer	0.2	2	65	WELL	P	IRRIGATION	280792	50	1.501	0.2101	7/24/2038	4112
BOARDWALK APARTMENTS	Biscayne Aquifer	0.2	2	65	WELL	P	IRRIGATION	280793	50	1.501	0.2101	7/24/2038	4112
BOARDWALK WEST	Biscayne Aquifer	0.33	2	65	WELL	P	IRRIGATION	279679	50	0.4495	0.0621	7/25/2038	1232
AVONDALE PARKSIDE	Biscayne Aquifer	0.269	4	80	WELL	P	IRRIGATION	279867	30	0.3677	0.0508	8/31/2038	1007
HOERBIGER - PLANT 3	Off-site Lake(s)	0.8	0	0	PUMP	P	IRRIGATION	280027	186	1.0007	0.1401	9/26/2038	2742
HOERBIGER PLANT 1 & 2	Unnamed Canal	1.6	0	0	PUMP	E	IRRIGATION	280031	204	2.0014	0.2801	10/1/2038	5483
PALM AIRE 53	On-site Lake(s) / Pond(s)	1.25	0	0	PUMP	P	IRRIGATION	280051	120	1.7025	0.2352	10/3/2038	4664
1202 HOLDINGS LLC	Biscayne Aquifer	0.51	2	70	WELL	P	IRRIGATION	280241	38	0.1376	0.0193	11/1/2038	377
RICHARD SEGAL	Biscayne Aquifer	1	3	100	WELL	P	IRRIGATION	280768	120	0.3127	0.0438	1/15/2039	857
Southern Grouts And Mortars	Biscayne Aquifer	2.04	3	135	WELL	P	IRRIGATION	282085	65	34	2.8	6/24/2039	
SOUTHEASTERN FREIGHT-POMPANO	Biscayne Aquifer	6.02	4	80	WELL	E	IRRIGATION	158703	65	8.1994	1.1325	8/16/2039	22464
SOUTHEASTERN FREIGHT-POMPANO	On-site Lake(s)	6.02	0	0	PUMP	P	IRRIGATION	282453	120	8.1994	1.1325	8/16/2039	22464
CALIBER COLLISION	Biscayne Aquifer	1	4	70	WELL	E	IRRIGATION	282793	60			9/20/2039	
MLK/POWERLINE	Water Table Aquifer	3.52	3	60	WELL	P	IRRIGATION	284309	65			3/17/2040	
POMPANO CITI CENTER OUTPARCEL RETAIL BUILI	Biscayne Aquifer	1.68	4	100	WELL	P	IRRIGATION	284424	35			3/24/2040	
1CTC LLC	SFWMD Canal (C-14)	0.85	0	0	PUMP	E	IRRIGATION	42880	150			4/3/2040	
M L K MARQUIS APARTMENTS	Biscayne Aquifer	1.14	4	100	WELL	P	IRRIGATION	284924	120			5/29/2040	

SONATA-NORTH PARCEL	Biscayne Aquifer	2.96	4	100	WELL	P	IRRIGATION	286660	85			2/8/2041	
SONATA-SOUTH PARCEL	Biscayne Aquifer	4	4	100	WELL	P	IRRIGATION	286661	85			2/8/2041	
ISLAND CLUB AT PALM AIRE	Biscayne Aquifer	13.8	4	60	WELL	P	IRRIGATION	287027	70			3/31/2041	
LEGACY TOWNHOMES IRRIGATION	Biscayne Aquifer	0.89	3	100	WELL	P	IRRIGATION	287907	60			7/9/2041	
CONTRACTOR'S BUSINESS PARK	Off-site Canal(s)	2.4	0	0	PUMP	E	IRRIGATION	110848	100	2.8297	0.3944	9/3/2041	7753
JOHN KNOX VILLAGE	Surficial Aquifer System	25.39	8	110	WELL	E	IRRIGATION	105241	200	19.2494	2.4149	10/14/2041	52738
JOHN KNOX VILLAGE	Surficial Aquifer System	25.39	8	110	WELL	E	IRRIGATION	105242	200	19.2494	2.4149	10/14/2041	52738
JOHN KNOX VILLAGE	On-site Lake(s) / Pond(s)	25.39	0	0	PUMP	A	IRRIGATION	105249	0			10/14/2041	
JOHN KNOX VILLAGE	On-site Lake(s) / Pond(s)	25.39	0	0	PUMP	A	IRRIGATION	105257	0			10/14/2041	
JOHN KNOX VILLAGE	On-site Lake(s) / Pond(s)	25.39	0	0	PUMP	A	IRRIGATION	105258	0			10/14/2041	
JOHN KNOX VILLAGE	On-site Lake(s) / Pond(s)	25.39	0	0	PUMP	A	IRRIGATION	105259	0			10/14/2041	
JOHN KNOX VILLAGE	On-site Lake(s) / Pond(s)	25.39	0	0	PUMP	A	IRRIGATION	105260	0			10/14/2041	
JOHN KNOX VILLAGE	On-site Lake(s) / Pond(s)	25.39	0	0	PUMP	A	IRRIGATION	105261	0			10/14/2041	
JOHN KNOX VILLAGE	On-site Lake(s) / Pond(s)	25.39	0	0	PUMP	A	IRRIGATION	105262	0			10/14/2041	
JOHN KNOX VILLAGE	On-site Lake(s) / Pond(s)	25.39	0	0	PUMP	E	IRRIGATION	288587	1000			10/14/2041	
LOEHMANS PLAZA AT PALM AIRE	Biscayne Aquifer	0.14	2.5	50	WELL	E	IRRIGATION	113141	25			11/4/2041	
CHURCH	Biscayne Aquifer	1	2	35	WELL	P	IRRIGATION	288823	35			11/22/2041	
SANDERS PARK ELEMENTARY	Biscayne Aquifer	4	6	100	WELL	E	IRRIGATION	289175	200			1/19/2042	
OLD DOMINION FREIGHT	Surficial Aquifer System	0.5	4	115	WELL	E	IRRIGATION	117045	400	0.6399	0.0896	1/25/2042	1753
PORT CONSOLIDATED INC	Biscayne Aquifer	1.3	2	150	WELL	E	IRRIGATION	116723	100	1.1709	0.1609	2/18/2042	3208
RESOURCE METAL	Biscayne Aquifer	0.88	4	100	WELL	P	INDUSTRIAL	290284	25			6/17/2042	
RESOURCE METAL	Biscayne Aquifer	0.88	4	100	WELL	P	IRRIGATION	290285	25			6/17/2042	
AZZURI KITCHENS	Broward County WCD Canal System	2.31	0	0	PUMP	P	IRRIGATION	290557	50			7/6/2042	
LAKE BRIDGE TOWNHOMES	On-site Lake(s)	8.5	0	0	PUMP	E	IRRIGATION	291149	90			9/23/2042	
JAGUAR LAND ROVER FORT LAUDERDALE	Biscayne Aquifer	2	3	100	WELL	P	IRRIGATION	291537	50			11/15/2042	
ST. JOSEPH MANOR PHASE II	Biscayne Aquifer	8.636	4	143	WELL	E	IRRIGATION	291568	70			12/2/2042	
BURLINGTON SELF STORAGE	Biscayne Aquifer	1	2	70	WELL	P	IRRIGATION	293182	50			6/1/2043	
POMPANO MANOR (LOT 5 STEEL CITY)	Biscayne Aquifer	0.26	2	70	WELL	E	IRRIGATION	133004	40	0.2874	0.0401	6/9/2043	787
Eagle Pointe	Surficial Aquifer System	3.2	4	100	WELL	E	IRRIGATION	293695	100			7/31/2043	
Hunters Manor	Surficial Aquifer System	15.78	3	100	WELL	P	IRRIGATION	293662	50			8/10/2043	
Hunters Manor	Surficial Aquifer System	15.78	3	100	WELL	P	IRRIGATION	293663	50			8/10/2043	
U S Concrete Products	Biscayne Aquifer	3.85	2	120	WELL	E	INDUSTRIAL	139739	80	1.6425	0.1368	8/16/2043	4500
U S Concrete Products	Biscayne Aquifer	3.85	4	100	WELL	E	INDUSTRIAL	139740	80	1.6425	0.1368	8/16/2043	4500
1500 Copans Road Dev	Surficial Aquifer System	2.13	3	105	WELL	E	IRRIGATION	142778	125	0.7406	0.0947	9/12/2043	2029
SOUTHWEST COMMUNITY CENTER	SFWMD Canal (C-14)	1.68	0	0	PUMP	E	IRRIGATION	121282	80	2.4211	0.3326	2/15/2044	6633
Captiva Cove III	Biscayne Aquifer	3.28	3	90	WELL	P	IRRIGATION	295388	130			3/5/2044	
JMA Investment Inc	Surficial Aquifer System	8	4	125	WELL	E	IRRIGATION	147150	80	2.1855	0.2795	4/11/2044	5988
RACETRACK LOGISTICS CENTER POMPANO	On-site Lake	87.79	0	0	PUMP	P	IRRIGATION	295468	280			4/12/2044	
European Sink	Biscayne Aquifer	0.4	2	40	WELL	E	IRRIGATION	149259	45	0.3415	0.0437	4/17/2044	936
COPANS AUTO CENTER	Biscayne Aquifer	1	2	89	WELL	P	IRRIGATION	151249	14	0.0683	0.0087	6/24/2044	187
CITY OF POMPANO BEACH	Biscayne Aquifer	12320	16	136	WELL	E	PUBLIC WATER S	2622	1500	7067	665.1	12/27/2065	19361644
CITY OF POMPANO BEACH	Biscayne Aquifer	12320	16	107	WELL	A	PUBLIC WATER S	2623	0	7067	665.1	12/27/2065	19361644
CITY OF POMPANO BEACH	Biscayne Aquifer	12320	16	140	WELL	E	PUBLIC WATER S	2624	1800	7067	665.1	12/27/2065	19361644
CITY OF POMPANO BEACH	Biscayne Aquifer	12320	16	108	WELL	E	PUBLIC WATER S	2625	1500	7067	665.1	12/27/2065	19361644
CITY OF POMPANO BEACH	Biscayne Aquifer	12320	14	156	WELL	E	PUBLIC WATER S	2626	2200	7067	665.1	12/27/2065	19361644
CITY OF POMPANO BEACH	Biscayne Aquifer	12320	16	90	WELL	E	PUBLIC WATER S	2627	1500	7067	665.1	12/27/2065	19361644
CITY OF POMPANO BEACH	Biscayne Aquifer	12320	16	90	WELL	E	PUBLIC WATER S	2628	1500	7067	665.1	12/27/2065	19361644
CITY OF POMPANO BEACH	Biscayne Aquifer	12320	16	131	WELL	E	PUBLIC WATER S	2629	1500	7067	665.1	12/27/2065	19361644
CITY OF POMPANO BEACH	Biscayne Aquifer	12320	16	113	WELL	E	PUBLIC WATER S	2630	1800	7067	665.1	12/27/2065	19361644
CITY OF POMPANO BEACH	Biscayne Aquifer	12320	16	127	WELL	E	PUBLIC WATER S	2631	1500	7067	665.1	12/27/2065	19361644
CITY OF POMPANO BEACH	Biscayne Aquifer	12320	16	123	WELL	E	PUBLIC WATER S	2632	1500	7067	665.1	12/27/2065	19361644
CITY OF POMPANO BEACH	Biscayne Aquifer	12320	16	115	WELL	E	PUBLIC WATER S	2633	1800	7067	665.1	12/27/2065	19361644
CITY OF POMPANO BEACH	Biscayne Aquifer	12320	16	114	WELL	E	PUBLIC WATER S	2634	1500	7067	665.1	12/27/2065	19361644
CITY OF POMPANO BEACH	Biscayne Aquifer	12320	18	140	WELL	E	PUBLIC WATER S	2635	2000	7067	665.1	12/27/2065	19361644
CITY OF POMPANO BEACH	Biscayne Aquifer	12320	18	130	WELL	E	PUBLIC WATER S	2636	2000	7067	665.1	12/27/2065	19361644
CITY OF POMPANO BEACH	Biscayne Aquifer	12320	16	150	WELL	E	PUBLIC WATER S	2637	2400	7067	665.1	12/27/2065	19361644
CITY OF POMPANO BEACH	Biscayne Aquifer	12320	16	130	WELL	E	PUBLIC WATER S	2638	2400	7067	665.1	12/27/2065	19361644
CITY OF POMPANO BEACH	Biscayne Aquifer	12320	16	158	WELL	E	PUBLIC WATER S	2639	2100	7067	665.1	12/27/2065	19361644
CITY OF POMPANO BEACH	Biscayne Aquifer	12320	16	154	WELL	E	PUBLIC WATER S	2640	2100	7067	665.1	12/27/2065	19361644
CITY OF POMPANO BEACH	Biscayne Aquifer	12320	16	153	WELL	E	PUBLIC WATER S	2641	1600	7067	665.1	12/27/2065	19361644
CITY OF POMPANO BEACH	Biscayne Aquifer	12320	16	153	WELL	E	PUBLIC WATER S	2642	2100	7067	665.1	12/27/2065	19361644
CITY OF POMPANO BEACH	Biscayne Aquifer	12320	16	153	WELL	E	PUBLIC WATER S	164567	2100	7067	665.1	12/27/2065	19361644
CITY OF POMPANO BEACH	Biscayne Aquifer	12320	16	153	WELL	E	PUBLIC WATER S	164568	2100	7067	665.1	12/27/2065	19361644
CITY OF POMPANO BEACH	Biscayne Aquifer	12320	16	153	WELL	E	PUBLIC WATER S	164569	2100	7067	665.1	12/27/2065	19361644
CITY OF POMPANO BEACH	Biscayne Aquifer	12320	16	153	WELL	E	PUBLIC WATER S	177414	2100	7067	665.1	12/27/2065	19361644
CITY OF POMPANO BEACH	Biscayne Aquifer	12320	16	107	WELL	P	PUBLIC WATER S	284524	1500			12/27/2065	

APPENDIX C

CITY OF POMPANO BEACH CONSUMPTIVE USE PERMIT

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
WATER USE INDIVIDUAL PERMIT

APPLICATION NO: 200930-9 **PERMIT NUMBER:** 06-00070-W

DATE ISSUED: December 8, 2020 **EXPIRATION DATE:** December 27, 2065

PERMITTEE: CITY OF POMPANO BEACH
UTILITIES DEPARTMENT,1205 N. E. 5TH AVENUE
POMPANO BEACH, FL 33060

PROJECT NAME: CITY OF POMPANO BEACH

PROJECT LOCATION: Broward County, S25-28,32-36/T48S/R42E
S1-12/T49S/R42E

PROJECT DESCRIPTION/AUTHORIZING:

The use of groundwater from the Biscayne aquifer to supply raw water for public water supply use with an annual allocation of 7,200.04 million gallons.

This is to notify you of South Florida Water Management District's (District) agency action concerning Permit Application Number 200930-9, received September 30, 2020. This action is taken pursuant to Chapter 373, Part II, Florida Statutes (F.S.), Rule 40E-1.603 and Chapter 40E-2, Florida Administrative Code (F.A.C.). Based on the information provided, District rules have been adhered to and a Water Use Individual Permit is in effect for this project subject to:

1. Not receiving a filed request for an administrative hearing pursuant to Section 120.57, F.S. and Section 120.569, F.S., or a request for a judicial review pursuant to Section 120.68, F.S.
2. The attached 46 permit conditions.
3. The attached 12 exhibits.

By acceptance and utilization of the water authorized under this permit, the Permittee agrees to hold and save the District and its successors harmless from any and all damages, claims or liabilities that may arise by reason of the construction, maintenance or use of activities authorized by this permit. Should you object to the permit, please refer to the attached "Notice of Rights" that addresses the procedures to be followed if you desire a public hearing or other review of the proposed agency action. Should you wish to object to the proposed agency action or file a petition or request, please provide written objections, petitions, requests and/or waivers to: Office of the District Clerk, South Florida Water Management District, 3301 Gun Club Road, West Palm Beach, FL 33406, or by email to clerk@sfwmd.gov.

CERTIFICATION OF SERVICE

I HEREBY CERTIFY THAT this written notice has been mailed or electronically transmitted to the Permittee (and the persons listed in the attached distribution list) this 8th day of December, 2020, in accordance with Section 120.60(3), F.S. Notice was also electronically posted on this date through a link on the home page of the District's website (my.sfwmd.gov/ePermitting).

BY: Lisandra Jones
LISANDRA JONES
DEPUTY CLERK, SOUTH FLORIDA WATER MANAGEMENT DISTRICT

SPECIAL PERMIT CONDITIONS

1. This permit is issued to:
   CITY OF POMPANO BEACH
   UTILITIES DEPARTMENT
   1205 N.E. 5TH AVENUE
   POMPANO BEACH, FL 33060

2. This permit shall expire on December 27, 2065.

   The base condition allocation from the Biscayne aquifer shall expire on December 8, 2040.

3. Use classification is:

   Public Water Supply

4. Source classification is:

   Groundwater from:
   Biscayne Aquifer

5. Allocation:

   Total annual allocation is 7,200.04 million gallons (MG). (19.73 MGD).

   Total maximum monthly allocation is 690.00 MG.

   Until the Project has received offset water to prevent a net increase in the volume or cause a change in timing on a monthly basis of surface and groundwater withdrawn from the Lower East Coast Everglades Waterbodies, the total allocation from the Biscayne aquifer shall be limited to the base condition allocation of:

   6,711.90 MGY (18.39 MGD)

   659.69 MG maximum month.

   Between November 18, 2040 and December 27, 2065 without renewal of the base condition allocation, withdrawals from the Biscayne aquifer that are offset from the C-51 Reservoir, Phase 1 Project shall be limited to:

   Annual allocation shall not exceed 730 MG (2 MGD).

   Maximum monthly allocation shall not exceed 71.74 MG.

   Withdrawals from the Biscayne aquifer are further restricted by wellfield as follows:

Western (Palm-Aire) Wellfield:

Annual allocation is 4,015.00 MG (11 MGD).

Maximum month allocation is 394.80 MG.

When the required volume of offset water has been delivered to the Project, the following limits from the Western (Palm-Aire) Wellfield shall apply:

Annual allocation is 4,503.04 MG (12.34 MGD).

Maximum month allocation is 495.33 MG.

Eastern (Airport) Wellfield:

Annual allocation is 2,697.00 MGY (7.39 MGD).

Monthly withdrawals from the Eastern (Airport) Wellfield shall not exceed 186 MG for November 1st through May 31st of each year.

Monthly withdrawals from the Eastern (Airport) Wellfield shall not exceed 279 MG for June 1st through October 31st of each year.

These allocations represent the amount of water required to meet the water demands as a result of a rainfall deficit during a drought with the probability of recurring one year in ten. The Permittee shall not exceed these allocations in hydrologic conditions less than a 1-in-10 year drought event. Compliance with the annual allocation is based on the quantity withdrawn over a 12-month time period. Compliance with the maximum monthly allocation is based on the greatest quantity withdrawn in any single month. The annual allocation expressed in GPD or MGD is for informational purposes only.

If the rainfall deficit is more severe than that expected to recur once every ten years, the withdrawals shall not exceed that amount necessary to continue to meet the reasonable-beneficial demands under such conditions, provided no harm to the water resources occur and:

1. All other conditions of the permit are met; and
2. The withdrawal is otherwise consistent with applicable declared Water Shortage Orders in effect pursuant to Chapter 40E-21, F.A.C.

6. Withdrawal facilities:

Groundwater - Proposed:

1 - 16" X 107' X 1500 GPM Well Cased To 87 Feet

Groundwater - Existing:

1 - 16" X 131' X 1500 GPM Well Cased To 97 Feet
1 - 16" X 114' X 1500 GPM Well Cased To 114 Feet
4 - 16" X 153' X 2100 GPM Wells Cased To 80 Feet
1 - 16" X 153' X 1600 GPM Well Cased To 80 Feet
1 - 16" X 140' X 1800 GPM Well With Unknown Cased Depth
1 - 16" X 130' X 2400 GPM Well Cased To 72 Feet
1 - 16" X 123' X 1500 GPM Well Cased To 90 Feet
1 - 18" X 130' X 2000 GPM Well Cased To 113.5 Feet
1 - 16" X 136' X 1500 GPM Well With Unknown Cased Depth
1 - 16" X 108' X 1500 GPM Well With Unknown Cased Depth
1 - 16" X 158' X 2100 GPM Well Cased To 78 Feet
1 - 14" X 156' X 2200 GPM Well Cased To 100 Feet
1 - 16" X 127' X 1500 GPM Well Cased To 88 Feet
2 - 16" X 90' X 1500 GPM Wells Cased To 90 Feet
1 - 16" X 150' X 2400 GPM Well Cased To 76 Feet
1 - 16" X 154' X 2100 GPM Well Cased To 80 Feet
1 - 16" X 153' X 2100 GPM Well Cased To 79 Feet
1 - 18" X 140' X 2000 GPM Well Cased To 115 Feet
1 - 16" X 115' X 1800 GPM Well Cased To 115 Feet
1 - 16" X 113' X 1800 GPM Well Cased To 93 Feet

7. The Permittee shall submit all data as required by the implementation schedule for each of the permit conditions to: SFWMD at www.sfwmd.gov/ePermitting, or Regulatory Support, 3301 Gun Club Road, West Palm Beach, FL 33406.

8. The Permittee must submit the appropriate application form incorporated by reference in Rule 40E-2.101, F.A.C., to the District prior to the permit expiration date in order to continue the use of water.

9. The Permittee shall secure a well construction permit prior to construction, repair, or abandonment of all wells, as described in Chapter 40E-3, F.A.C.

10. Prior to any withdrawals at the project, the Permittee shall provide the results of the calibration testing of the identified water accounting method(s) and equip all existing and proposed withdrawal facilities with approved water use accounting method(s) pursuant to Subsection 4.1.1 of the Applicant's Handbook for Water Use Permit Applications within the South Florida Water Management District.

11. Every five years from the date of last calibration, the Permittee shall submit re-calibration data for each withdrawal facility.

12. Monthly withdrawals for each withdrawal facility shall be reported to the District quarterly. The water accounting method and means of calibration shall be stated on each report.

13. The Permittee shall notify the District within 30 days of any change in service area boundary that results in a change in demand that affects its permitted allocation. The allocation shall be modified to effectuate such change.

14. The Permittee shall maintain an accurate flow meter at the intake of the water treatment plant for the purpose of measuring daily inflow of water.

15. If at any time there is an indication that the well casing, valves, or controls leak or have become inoperative, repairs or replacement shall be made to restore the system to an operating condition. Failure to make such repairs shall be cause for filling and abandoning the well, in accordance with procedures outlined in Chapter 40E-3, F.A.C.

16. The Standard Water Conservation Plan described in Subsection 2.3.2.F.1.a of the Applicant's Handbook for Water Use Permit Applications within the South Florida Water Management District and in the application file (Application #200930-9) must continue being implemented.

17. The Permittee shall notify the District within 30 days of entering into an inter-local agreement, contract, or other similar instrument to deliver or receive water outside of its service area or to serve a demand not identified to determine the allocation described in this permit. A copy of such agreement shall be provided to the District. The monthly volume of water delivered and/or received via each inter-local agreement, contract, or other similar instrument shall be submitted to the District at the same reporting frequency as the withdrawals for each withdrawal facility required in this permit.

18. The Permittee shall implement the wellfield operating plan submitted in support of the permit application, as described in the District staff report.

19. The Permittee shall determine unaccounted-for distribution system losses (for the entire distribution system) on a monthly basis, including the way these losses are calculated. Reports shall be submitted to the District on a yearly basis and are due by April 30th of each year.

    If unaccounted for loss is greater than 10 percent for any given year, the Permittee shall submit to the District for approval, a formal leak detection program that meets the requirements of Subsection 4.1.2 of the Applicant's Handbook for Water Use Permit Applications within the South Florida Water Management District, to address the reduction of such water loss.

20. The Permittee shall maintain an accurate flow meter at the point of discharge from the treatment plant for the purpose of measuring the daily flow of water.

21. The Permittee shall submit to the District an updated "Summary of Groundwater (Well) or Surface Water (Pump or Culvert) Facilities" table ("Section IV - Sources of Water", Water Use Permit Application Form 1379) at least 30 days prior to a change in any facility status (e.g. installation, relocation, abandonment) to include all specifications of the well, pump or culvert (e.g. actual total

and cased depths, pump manufacturer and model numbers, pump types, intake depths and type of meters, culvert type, length, cross-section, diameter, height, width, invert elevation, control device, and water use accounting method).

22. The Permittee shall submit to the District an updated "Summary of Groundwater (Well) Facilities" table ("Section IV - Sources of Water", Water Use Permit Application Form 1379) within 90 days of completion of the proposed wells identifying the actual total and cased depths, pump manufacturer and model numbers, pump types, intake depths and type of meters.

23. If a proposed well location is different from a location specified in the application, the Permittee shall submit to the District an evaluation of the impact of pumpage from the proposed well location on adjacent existing legal uses, pollution sources, environmental features, the saline water interface, and water bodies one month prior to all new well construction. The Permittee is advised the proposed well locations and resulting impacts must be in compliance with all permitting criteria and performance standards in effect at that time.

24. Entities that control, either directly or indirectly, a wastewater treatment plant and/or reuse distribution system, and which have determined pursuant to Section 403.064, F.S., that use of reclaimed water is feasible, must provide the District with annual updates of the following information: (A) the status of distribution system construction, including location and capacity of lines; (B) a summary of uncommitted supplies for the next year; (C) copies of any new or amended local mandatory reclaimed water reuse zone ordinances; and (D) a list of end-users who have contracted to receive reclaimed water and the agreed upon quantity of water to be delivered.

25. Prior to the initial withdrawal above the established base condition water use permitted by offset water, authorization must be granted by the District.

26. The C-51 Reservoir Project Phase 1 is not currently fully operational. For the purpose of this consumptive use permit, the District defines fully operational as the reservoir is fully constructed, all pumps are in place and operational, a District approved flow route to provide offsets to the Project is determined, all agreements with 298 districts are finalized, and water deliveries can be made to the Project and properly accounted for as offset water. In the event C-51 Reservoir, Phase 1 Project water is not available when demands exceed the Biscayne aquifer base condition, the Permittee shall modify the operating plan to utilize the Upper Floridan aquifer to meet the demands unable to be met by the C-51 Reservoir, Phase 1 Project.

27. Prior to receiving offset water from the C-51 Reservoir, Phase 1, the details of the location and configuration of the facility(s) to account for deliveries of offset water to offset additional withdrawals from the City of Pompano Beach Biscayne aquifer Western (Palm-Aire) Wellfield shall be submitted to the District for approval. The intent of the accounting facility is to ensure that offset water is delivered in the quantities needed and to ensure that the Permittee is obtaining the quantities of water to meet the conditions for permit issuance. Measuring flows will provide reasonable assurances that offset water deliveries are made. Using canal water level elevation

data is not sufficient since the data can be influenced by many factors. Prior to the use of this facility(s), it shall be equipped with a District-approved water use accounting system and a report of calibration shall be submitted to the District prior to the delivery of offset water, pursuant to Subsection 4.1 of the AH. In addition, a report of recalibration for the facility shall be submitted to the District for this facility every five years from each previous calibration, continuing at five-year increments. This condition does not require the Permittee to construct a structure or water accounting apparatus to quantify offset deliveries of C-51 Reservoir, Phase 1 water. The use of an appropriately located existing facility is sufficient. Similarly, the calibration reports for the structure or water accounting facility can be obtained from its owner and provided by the Permittee to the District.

28. The Permittee shall record and submit monthly to the District the C-51 Reservoir, Phase 1 offset water use deliveries from the District approved facility. The water accounting method and means of calibration shall be stated on each report.

29. Withdrawals above the established base condition water use of 659.69 million gallons maximum month and 6,711.90 million gallons annually (18.39 million gallons per day) are only authorized if the Permittee has received the required offset water to prevent an increase in volume or change in timing of surface and groundwater withdrawn from the Lower East Coast Everglades Waterbodies over the base condition water use. Such withdrawals must be consistent with the operational plan described in Special Permit Condition 32.

30. Within 30 days of execution, the Permittee shall submit an updated signed copy of any changes made to the Agreement for Capacity Allocation in Phase 1 of the C-51 Reservoir, or similar instrument, to the District.

31. On August 31, 2021 and each year thereafter, the Permittee shall provide an annual update to the District on the progress of the C-51 Reservoir Phase 1 Project. Once the C-51 Reservoir, Phase 1 becomes fully operational, as defined herein, the Permittee shall cease submitting the annual update on the progress of the C-51 Reservoir Phase 1.

32. The Permittee acknowledges that an Operating Plan for the C-51 Reservoir, Phase 1 has not been finalized. The Permittee shall comply with the final operating plan approved by the District prior to the use of offset water above the established base condition water use.

33. Pursuant to Section 373.236(4), F.S., every ten years from the date of permit issuance, the Permittee shall submit a water use compliance report for review and approval by District Staff to SFWMD at www.sfwmd.gov/ePermitting, or Regulatory Support, 3301 Gun Club Road, West Palm Beach, FL 33406.

34. The Permittee shall implement the following saline water intrusion monitoring program:

    The Permittee shall record monthly chloride concentration for Wells SWI1D, SWI1S, SWI2-D,

SWI2-S, SWI3-D, SWI3-S, SWI4-D, SWI4-S, SWI5-D, SWI5-S, SWI6-D, SWI6-S, SWI9-D, SWI9-S, SWI10-D, SWI10-S, PRW1, and PRW8. Chloride data shall be submitted to the District quarterly.

If data shows an increasing trend in chloride levels in the Eastern (Airport) Wellfield monitor wells (SWI1D, SWI1S, SWI2-D, SWI2-S, SWI3-D, SWI3-S, SWI4-D, SWI4-S, SWI5-D, SWI5-S, SWI6-D, SWI6-S, SWI9-D, SWI9-S, SWI10-D, and SWI10-S) with a correlating increase in withdrawals from the Eastern (Airport) Wellfield, the Permittee shall submit a saline water intrusion action plan to the District.

35. The Permittee shall record monthly water level for Wells SWI1D, SWI1S, SWI2-D, SWI2-S, SWI3-D, SWI3-S, SWI4-D, SWI4-S, SWI5-D, SWI5-S, SWI6-D, SWI6-S, SWI9-D, SWI9-S, SWI10-D, SWI10-S, PRW1, and PRW8. Water level data shall be submitted to the District quarterly.

STANDARD PERMIT CONDITIONS

1. All water uses authorized by this permit shall be implemented as conditioned by this permit, including any documents incorporated by reference in a permit condition. The District may revoke this permit, in whole or in part, or take enforcement action, pursuant to Section 373.136 or 373.243, F.S., unless a permit modification has been obtained to address the noncompliance.

   The Permittee shall immediately notify the District in writing of any previously submitted material information that is later discovered to be inaccurate.

2. The Permittee is advised that this permit does not relieve any person from the requirement to obtain all necessary federal, state, local and special district authorizations.

3. The Permittee shall notify the District in writing within 30 days of any sale, transfer, or conveyance of ownership or any other loss of permitted legal control of the Project and/or related facilities from which the permitted consumptive use is made. Where Permittee's control of the land subject to the permit was demonstrated through a lease, the Permittee must either submit a new or modified lease showing that it continues to have legal control or documentation showing a transfer in control of the permitted system/project to the new landowner or new lessee. All transfers of ownership are subject to the requirements of Rule 40E-1.6107, F.A.C. Alternatively, the Permittee may surrender the consumptive use permit to the District, thereby relinquishing the right to conduct any activities under the permit.

4. Nothing in this permit should be construed to limit the authority of the District to declare a water shortage and issue orders pursuant to Chapter 373, F.S. In the event of a declared water shortage, the Permittee must adhere to the water shortage restrictions, as specified by the District. The Permittee is advised that during a water shortage, reports shall be submitted as required by District rule or order. The Permittee is advised that during a water shortage, pumpage, water levels, and water quality data shall be collected and submitted as required by District orders issued pursuant to Chapter 40E-21, F.A.C.

5. This permit does not convey to the Permittee any property rights or privileges other than those specified herein, nor relieve the permittee from complying with any applicable local government, state, or federal law, rule, or ordinance.

6. With advance notice to the Permittee, District staff with proper identification shall have permission to enter, inspect, observe, collect samples, and take measurements of permitted facilities to determine compliance with the permit conditions and permitted plans and specifications. The Permittee shall either accompany District staff onto the property or make provision for access onto the property.

7. A. The Permittee may seek modification of any term of an unexpired permit. The Permittee is advised that Section 373.239, F.S., and Rule 40E-2.331, F.A.C., are applicable to permit modifications.

   B. The Permittee shall notify the District in writing 30 days prior to any changes to the project that

could potentially alter the reasonable demand reflected in the permitted allocation. Such changes include, but are not limited to, change in irrigated acreage, crop type, irrigation system, large users agreements, or water treatment method. Permittee will be required to apply for a modification of the permit for any changes in permitted allocation.

8. If any condition of the permit is violated, the permit shall be subject to review and modification, enforcement action, or revocation pursuant to Chapter 373, F.S.

9. The Permittee shall mitigate interference with existing legal uses that was caused in whole or in part by the Permittee's withdrawals, consistent with the approved mitigation plan. As necessary to offset the interference, mitigation will include pumpage reduction, replacement of the impacted individual's equipment, relocation of wells, change in withdrawal source, or other means.

   Interference to an existing legal use is defined as an impact that occurs under hydrologic conditions equal to or less severe than a 1-in-10 year drought event that results in the:

   A. Inability to withdraw water consistent with provisions of the permit, such as when remedial structural or operational actions not materially authorized by existing permits must be taken to address the interference; or

   B. Change in the quality of water pursuant to primary State Drinking Water Standards to the extent that the water can no longer be used for its authorized purpose, or such change is imminent.

10. The Permittee shall mitigate harm to the natural resources caused by the Permittee's withdrawals, as determined through reference to the conditions for permit issuance. When harm occurs, or is imminent, the District will require the Permittee to modify withdrawal rates or mitigate the harm. Harm, as determined through reference to the conditions for permit issuance includes:

    A. Reduction in ground or surface water levels that results in harmful lateral movement of the fresh water/salt water interface,

    B. Reduction in water levels that harm the hydroperiod of wetlands,

    C. Significant reduction in water levels or hydroperiod in a naturally occurring water body such as a lake or pond,

    D. Harmful movement of contaminants in violation of state water quality standards, or

    E. Harm to the natural system including damage to habitat for rare or endangered species.

11. The Permittee shall mitigate harm to existing off-site land uses caused by the Permittee's withdrawals, as determined through reference to the conditions for permit issuance. When harm occurs, or is imminent, the District will require the Permittee to modify withdrawal rates or mitigate the harm. Harm as determined through reference to the conditions for permit issuance, includes:

A. Significant reduction in water levels on the property to the extent that the designed function of the water body and related surface water management improvements are damaged, not including aesthetic values. The designed function of a water body is identified in the original permit or other governmental authorization issued for the construction of the water body. In cases where a permit was not required, the designed function shall be determined based on the purpose for the original construction of the water body (e.g. fill for construction, mining, drainage canal, etc.)

B. Damage to agriculture, including damage resulting from reduction in soil moisture resulting from consumptive use; or,

C. Land collapse or subsidence caused by reduction in water levels associated with consumptive use.

NOTICE OF RIGHTS

As required by Chapter 120, Florida Statutes, the following provides notice of the opportunities which may be available for administrative hearing pursuant to Sections 120.569 and 120.57, Florida Statutes, or judicial review pursuant to Section 120.68, Florida Statutes, when the substantial interests of a party are determined by an agency. Please note that this Notice of Rights is not intended to provide legal advice. Some of the legal proceedings detailed below may not be applicable or appropriate for your situation. You may wish to consult an attorney regarding your legal rights.

RIGHT TO REQUEST ADMINISTRATIVE HEARING

A person whose substantial interests are or may be affected by the South Florida Water Management District's (District) action has the right to request an administrative hearing on that action pursuant to Sections 120.569 and 120.57, Florida Statutes. Persons seeking a hearing on a District decision which affects or may affect their substantial interests shall file a petition for hearing in accordance with the filing instructions set forth herein within 21 days of receipt of written notice of the decision unless one of the following shorter time periods apply: (1) within 14 days of the notice of consolidated intent to grant or deny concurrently reviewed applications for environmental resource permits and use of sovereign submerged lands pursuant to Section 373.427, Florida Statutes; or (2) within 14 days of service of an Administrative Order pursuant to Section 373.119(1), Florida Statutes. "Receipt of written notice of agency decision" means receipt of written notice through mail, electronic mail, posting, or publication that the District has taken or intends to take final agency action. Any person who receives written notice of a District decision and fails to file a written request for hearing within the timeframe described above waives the right to request a hearing on that decision.

If the District takes final agency action that materially differs from the noticed intended agency decision, persons who may be substantially affected shall, unless otherwise provided by law, have an additional point of entry pursuant to Rule 28-106.111, Florida Administrative Code.

Any person to whom an emergency order is directed pursuant to Section 373.119(2), Florida Statutes, shall comply therewith immediately, but on petition to the board shall be afforded a hearing as soon as possible.

A person may file a request for an extension of time for filing a petition. The District may grant the request for good cause. Requests for extension of time must be filed with the District prior to the deadline for filing a petition for hearing. Such requests for extension shall contain a certificate that the moving party has consulted with all other parties concerning the extension and whether the District and any other parties agree to or oppose the extension. A timely request for an extension of time shall toll the running of the time period for filing a petition until the request is acted upon.

FILING INSTRUCTIONS

A petition for administrative hearing must be filed with the Office of the District Clerk. Filings with the Office of the District Clerk may be made by mail, hand-delivery, or e-mail. Filings by facsimile will not be accepted. A petition for administrative hearing or other document is deemed filed upon receipt during normal business hours by the Office of the District Clerk at the District's headquarters in West Palm Beach, Florida. The District's normal business hours are 8:00 a.m. – 5:00 p.m., excluding weekends and District holidays. Any document received by the Office of the District Clerk after 5:00 p.m. shall be deemed filed as of 8:00 a.m. on the next regular business day. Additional filing instructions are as follows:

- Filings by mail must be addressed to the Office of the District Clerk, 3301 Gun Club Road, West Palm Beach, Florida 33406.

- Filings by hand-delivery must be delivered to the Office of the District Clerk. Delivery of a petition to the District's security desk does not constitute filing. It will be necessary to request that the District's security officer contact the Office of the District Clerk. An employee of the District's Clerk's office will receive and process the petition.
- Filings by e-mail must be transmitted to the Office of the District Clerk at clerk@sfwmd.gov. The filing date for a document transmitted by electronic mail shall be the date the Office of the District Clerk receives the complete document.

INITIATION OF AN ADMINISTRATIVE HEARING

Pursuant to Sections 120.54(5)(b)4. and 120.569(2)(c), Florida Statutes, and Rules 28-106.201 and 28-106.301, Florida Administrative Code, initiation of an administrative hearing shall be made by written petition to the District in legible form and on 8 1/2 by 11 inch white paper. All petitions shall contain:

1. Identification of the action being contested, including the permit number, application number, District file number or any other District identification number, if known.
2. The name, address, any email address, any facsimile number, and telephone number of the petitioner, petitioner's attorney or qualified representative, if any.
3. An explanation of how the petitioner's substantial interests will be affected by the agency determination.
4. A statement of when and how the petitioner received notice of the District's decision.
5. A statement of all disputed issues of material fact. If there are none, the petition must so indicate.
6. A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the District's proposed action.
7. A statement of the specific rules or statutes the petitioner contends require reversal or modification of the District's proposed action.
8. If disputed issues of material fact exist, the statement must also include an explanation of how the alleged facts relate to the specific rules or statutes.
9. A statement of the relief sought by the petitioner, stating precisely the action the petitioner wishes the District to take with respect to the District's proposed action.

MEDIATION

The procedures for pursuing mediation are set forth in Section 120.573, Florida Statutes, and Rules 28-106.111 and 28-106.401–.405, Florida Administrative Code. The District is not proposing mediation for this agency action under Section 120.573, Florida Statutes, at this time.

RIGHT TO SEEK JUDICIAL REVIEW

Pursuant to Section 120.68, Florida Statutes, and in accordance with Florida Rule of Appellate Procedure 9.110, a party who is adversely affected by final District action may seek judicial review of the District's final decision by filing a notice of appeal with the Office of the District Clerk in accordance with the filing instructions set forth herein within 30 days of rendition of the order to be reviewed, and by filing a copy of the notice with the appropriate district court of appeals via the Florida Courts E-Filing Portal.

WATER USE STAFF REPORT

Application Number: 200930-9

Permit Number: 06-00070-W

Project Name: CITY OF POMPANO BEACH

Water Use Permit Status: MODIFICATION/RENEWAL

Location: BROWARD COUNTY, S25-28,32-36/T48S/R42E
S1-12/T49S/R42E
S19,20,29-32/T48S/R43E
S5-7/T49S/R43E

Applicant's Name and Address: CITY OF POMPANO BEACH
UTILITIES DEPARTMENT, 1205 N E 5TH AVENUE
POMPANO BEACH, FL 33060

Water Use Classification: Public Water Supply

Sources:

Groundwater from: Biscayne Aquifer

Authorized Allocation:

Annual Allocation: 7,200.04 Million Gallons (MG)

Maximum Monthly Allocation: 690.00 Million Gallons (MG)

Specific Source Limitations:	**Annual(MG)**	**Monthly(MG)**
Biscayne Aquifer-Western (Palm-Aire) Wellfield	4,503.04	495.33
Biscayne Aquifer-Eastern (Airport) Wellfield	2,697.00	279.00

Existing Withdrawal Facilities - Groundwater

Source: Biscayne Aquifer
1 - 16" X 150' X 2400 GPM Well Cased to 76 Feet
1 - 16" X 136' X 1500 GPM Well With Unknown Cased Depth
1 - 16" X 123' X 1500 GPM Well Cased to 90 Feet
1 - 16" X 115' X 1800 GPM Well Cased to 115 Feet
1 - 18" X 130' X 2000 GPM Well Cased to 113.5 Feet
1 - 16" X 130' X 2400 GPM Well Cased to 72 Feet
1 - 16" X 154' X 2100 GPM Well Cased to 80 Feet
1 - 16" X 153' X 2100 GPM Well Cased to 79 Feet

Existing Withdrawal Facilities - Groundwater

Source: Biscayne Aquifer
1 - 16" X 114' X 1500 GPM Well Cased to 114 Feet
1 - 16" X 140' X 1800 GPM Well With Unknown Cased Depth
1 - 14" X 156' X 2200 GPM Well Cased to 100 Feet
2 - 16" X 90' X 1500 GPM Wells Cased to 90 Feet
1 - 16" X 158' X 2100 GPM Well Cased to 78 Feet
1 - 16" X 108' X 1500 GPM Well With Unknown Cased Depth
1 - 16" X 113' X 1800 GPM Well Cased to 93 Feet
1 - 18" X 140' X 2000 GPM Well Cased to 115 Feet
1 - 16" X 127' X 1500 GPM Well Cased to 88 Feet
4 - 16" X 153' X 2100 GPM Wells Cased to 80 Feet
1 - 16" X 153' X 1600 GPM Well Cased to 80 Feet
1 - 16" X 131' X 1500 GPM Well Cased to 97 Feet

Proposed Withdrawal Facilities - Groundwater

Source: Biscayne Aquifer
1 - 16" X 107' X 1500 GPM Well Cased to 87 Feet

Rated Capacity Source	Status Code	GPM	MGM	MGY
Biscayne Aquifer	E	44,700	1,956.8	23,494
Biscayne Aquifer	P	1,500	65.7	788
Totals:		**46,200**	**2,022.5**	**24,282**

PURPOSE

The purpose of this application is to modify and renew Water Use Permit 06-00070-W for public water supply use. Withdrawals are from the Biscayne aquifer.

PROJECT DESCRIPTION

City of Pompano Beach (Project) is an existing public water supply utility consisting of two wellfields (Western [Palm-Aire] and Eastern [Airport]), in northeastern Broward County. The Western (Palm-Aire) Wellfield is located north and south of W. Atlantic Blvd. and the South Florida Water Management District (District) C-14 (Cypress Creek) Canal, between Florida's Turnpike and the Atlantic Blvd. Extension and the Eastern (Airport) Wellfield is located east of N. Dixie Highway between E. Copans Road and N.E. 10th Street, as shown on Exhibits 1 and 2. The Project's service area differs from the jurisdictional boundary and includes portions of Lighthouse Point and Lauderdale by the Sea. Portions of the city receive water service from Broward County Districts 1 and 2. Withdrawals are from 24 existing and one proposed Biscayne aquifer wells. The Project's facility locations are depicted in Exhibits 3A and 3B and withdrawal facility details are listed in Exhibit 4.

An Applicant must demonstrate, pursuant to the impact evaluation provisions in Subsection 3.1.2 of the Applicant's Handbook for Water Use Permit Applications within the South Florida Water Management District (AH), the requested allocation will not

cause a net increase in the volume or cause a change in timing on a monthly basis of surface water and groundwater withdrawn from the Lower East Coast Everglades Waterbodies over that resulting from the base condition water use. Therefore, in order to obtain additional withdrawals from the Biscayne aquifer beyond the base condition, an offset is required. These include alternative water supply and/or wet weather flows (from the Biscayne aquifer) not required for restoration. In this application, the Applicant is requesting the use of water from the Palm Beach Aggregates, C-51 Reservoir, Phase 1 Project (C-51 Reservoir, Phase 1) as an offset to allow withdrawals from the Biscayne aquifer over the base condition water use, consistent with Subsection 3.2.1.E.6.c of the AH.

The permit modification includes the addition of 2.0 million gallons per day (MGD) of water from the C-51 Reservoir, Phase 1 as an offset to allow withdrawals from the Biscayne aquifer over the base condition water use. The base condition water use is 6,718.63 million gallons annually (MGY) (18.41 MGD) split between the two wellfields (2,703.73 MGY [7.41 MGD] from the Eastern [Airport] Wellfield and 4,015.00 MGY [11 MGD] from the Western [Palm-Aire] Wellfield). Withdrawals from the Eastern (Airport) Wellfield have been historically limited to 2,697 MGY (7.39 MGD), therefore, the adjusted base condition water use for the Biscayne aquifer is 6.711.90 MGY (18.39 MGD).

The Applicant is requesting the total permit allocation to be increased from 6,478 MGY (17.75 MGD) to 7,200.04 MGY (19.73 MGD) and from 610 million gallons maximum month (MGM) to 690.00 MGM based on projected water use demands. Additional withdrawals of 489.10 MGY (1.34 MGD) from the Biscayne aquifer above the base condition water use will be from the Western (Palm-Aire) Wellfield. There is no change to the seasonal wellfield limits for the Eastern (Airport) Wellfield (186 MGM for the months of November through May and 279 MGM for the months of June through October), which is limited in an effort to reduce saline water intrusion.

Palm Beach Aggregates, C-51 Reservoir, Phase 1:
The C-51 Reservoir, Phase 1 is a diversion and impoundment permitted by the Florida Department of Environmental Protection (FDEP) Permit No. EI 50-301070-003. The C-51 Reservoir, Phase 1 will capture and store excess water from the District's C-51 Canal that will be discharged back into regional conveyance systems to provide offsets for potential impacts to Lower East Coast Waterbodies by C-51 Reservoir, Phase 1 participants, consistent with the District's Lower East Coast Regional Water Availability Rule. On December 4, 2019, the City of Pompano Beach entered into an "Agreement for Capacity Allocation in Phase 1 of the C-51 Reservoir" with Palm Beach Aggregates, LLC (the C-51 Reservoir, Phase 1 Permittee) to purchase a Capacity Allocation in Phase 1 of the C-51 Reservoir for 2.0 MGD.

The C-51 Reservoir, Phase 1 is the proposed alternative water supply source for the Project. Exhibit 5 contains milestones and dates for implementing the C-51 Reservoir, Phase 1. According to this exhibit, the C-51 Reservoir, Phase 1 is scheduled to be fully

operational in October 2022. For the purpose of this consumptive use permit, the District defines fully operational as the reservoir is fully constructed, all pumps are in place and operational, a District approved flow route to provide offsets to the Project is determined, all agreements with 298 districts are finalized, and water deliveries can be made to the Project and properly accounted for as offset water.

Facility Operation:
The Project includes 25 Biscayne aquifer production wells. There are 14 existing wells and one proposed well at the Eastern (Airport) Wellfield and 10 existing wells at the Western (Palm-Aire) Wellfield. The City of Pompano Beach currently has reduced withdrawal rates from Eastern (Airport) Wellfield Wells 11, 12, 13, and 14 as these wells are potentially closest to the furthest inland extent of saline water in the Biscayne aquifer. All wells are rotated on a monthly basis at the Eastern (Airport) Wellfield to prevent westward movement of saline water and for regular maintenance. At the Western (Palm-Aire) Wellfield all wells are rotated on a monthly basis for regular maintenance.

The Project's treatment plant has two parallel treatment processes, conventional lime softening (40 MGD), and nanofiltration membrane softening (10 MGD), for a total design capacity of 50 MGD. The lime softening water treatment plant receives raw water primarily from the Eastern (Airport) Wellfield and the nanofiltration membrane process receives raw water from the Western (Palm-Aire) Wellfield. Typical efficiency for lime softening treament is approximately 97 to 98 percent and typical efficiency for nanofiltration treatment is approximately 80 to 85 percent.

Interconnections:
The City of Pompano Beach has six interconnections: one with Margate, two with Broward County District 2A, and three with the City of Fort Lauderdale.

Unaccounted-for Distribution System Losses:
The District requires that the unaccounted-for water loss be reported for the entire distribution system. Unaccounted-for water loss may include unmetered use, water loss through leaks, water used to flush distribution lines, water used for fire-fighting, and other unidentified uses. If unaccounted-for water loss is greater than 10 percent for any given year, the Permittee shall submit a formal leak detection program to the District for approval to address the reduction of such water loss. Reported water loss was greater than 10 percent for 2018 (13.63 percent) and for 2019 (10.7 percent). The City of Pompano Beach has implemented their water loss reduction program which includes many improvements to bring current unaccounted-for water losses below 10 percent.

Permit History:
The Project was initially permitted in 1976 for Biscayne aquifer withdrawals from the Airport Wellfield. The Palm-Aire Wellfield was added to the permit in 1981. A temporary permit was issued in 1990 to increase the permit allocation to allow the immediate shift in withdrawals from the Airport Wellfield to the Palm-Aire Wellfield and to increase the

PROJECT DESCRIPTION (CONTINUED)

allocation for the Palm-Aire Wellfield from 6 MGD to 12 MGD due to saline water intrusion concerns. A new permit was issued in 1999 with an annual allocation of 6,972 MGY (19.1 MGD) and seasonal wellfield limitations for the Airport Wellfield of 186 MGM for the months of November through May and 279 MGM for the months of June through October. The 2005 permit renewal included withdrawals from 25 existing Biscayne aquifer wells, no change to the seasonal limit for the Airport Wellfield, an annual allocation of 7,067 MGY, and a maximum month allocation of 665.1 MGM through September 14, 2010. The annual allocation was reduced to 6,478 MGY after September 14, 2010 with a corresponding maximum month allocation of 610 MGM.

PROJECTED WATER USE DEMANDS

The annual and maximum month allocations for public water supply utilities are calculated as described in Subsection 2.3.2.F of the AH. Population projections for the Project's service area through 2040 were calculated based on adjusted Traffic Analysis Zones as described in the City of Pompano Beach's Water Supply Facilities Work Plan 2020 Update. As projections do not extend further than 2040, population data through 2065 was estimated using a declining population growth rate showing reducing percentage increases over time. The 2065 finished water demand of 16.63 MGD was determined by using the 5-year average finished water per capita use rate (PCUR) of 173.6 and a 2065 population of 112,198. Accounting for treatment losses, the 2065 raw water demand is 19.73 MGD. Based on projected water use demands, the total permit annual allocation is 7,200.04 MGY (19.73 MGD) and the total permit maximum month allocation is 690.00 MGM using a total maximum month peaking ratio of 1.15 and a maximum month peaking ratio of 1.32 for the Western (Palm-Aire) Wellfield. The wellfield limits for the Western (Palm-Aire) Wellfield are 4,503.04 MGY (12.34 MGD) and 495.33 MGM, which represent the 2065 demands (with offset credit from the C-51 Reservoir, Phase 1 Project). The annual wellfield limit for the Eastern (Airport) Wellfield is 2,697.00 MGY (7.39 MGD) and there are no changes to the seasonal wellfield limits for the Eastern (Airport) Wellfield (186 MGM for the months of November through May and 279 MGM for the months of June through October). Historic PCUR, maximum-month peaking factors, projected population growth, and estimated demands are shown on Exhibit 6A and Exhibit 6B shows the Project's future demands.

IMPACT EVALUATION

In order to determine the potential impacts the withdrawals might have on the water resource, the Applicant provided a calibrated three-dimensional groundwater flow model using the United States Geological Survey's (USGS) MODFLOW code. The model is based on the Broward County groundwater model initially developed by the District in 1992 and later revised and updated in 2000 (District 2000 and 2001). The model domain covers Broward County as well as parts of Palm Beach and Miami-Dade Counties and has been used for other public water supply utilities permitted for the C-51 Reservoir, Phase 1 Project.

The model is divided into five layers representing the surficial aquifer system. Layer 1 represents the water table and Layer 3 represents the primary production zone of the

IMPACT EVALUATION (CONTINUED)

Biscayne aquifer. A predictive scenario was run to evaluate potential impacts due to the requested increase in withdrawals. There is no change to the historic seasonal limits for the Eastern (Airport) Wellfield, therefore, the withdrawals from this wellfield are 7.39 MGD in each scenario. First, the model was run to show potential impacts due to Biscayne aquifer withdrawals of the base condition of 18.39 MGD (11 MGD from the Western [Palm-Aire] Wellfield). The second run (Run1) simulated projected withdrawals of 20.04 MGD (12.65 from the Western [Palm-Aire] Wellfield). Exhibits 7A and 7B show drawdown-difference contours, or additional drawdown due to the 1.65 MGD increase, for model Layers 1 and 3. Exhibits 8A and 8B show the cumulative drawdown contours for model Layers 1 (water table) and 3 (primary production zone). Additional model documentation can be found in the application file for Water Use Permit Application 200930-9.

WATER RESOURCE IMPACT EVALUATION

Water Resource Availability

Biscayne Aquifer-Western (Palm-Aire) Wellfield

Land surface elevation at the Western (Palm-Aire) Wellfield is approximately 13 feet National Geodetic Vertical Datum (NGVD). The Project withdraws water from the Biscayne aquifer, which is a highly permeable section of the surficial aquifer system. The base of the Biscayne aquifer is at approximately -180 feet NGVD beneath this wellfield (USGS Water Resources Investigations Report 87-4034). Due to the wellfield's proximity to the C-14 Canal, water levels in the wellfield are similar to water levels in the C-14 Canal. Water level data from the Project's monitor well PRW1, located at the Western (Palm-Aire) Wellfield, indicates that the average water level in the Biscayne aquifer for the period of record from September 1999 through June 2020 is approximately 4.0 feet NGVD. Model results indicate that approximately 3 feet of cumulative drawdown may occur at the Western (Palm-Aire) Wellfield, inclusive of withdrawals of 20.04 MGD (12.65 MGD from the Western [Palm-Aire] Wellfield) simulated in the predictive scenario, leaving approximately 181 feet of saturated thickness in the Biscayne aquifer. Approximately 0.3 feet of additional drawdown may occur at the Western (Palm-Aire) Wellfield. Withdrawals above the base condition will be offset with water from the C-51 Reservoir, Phase 1. Therefore, the potential for harm to occur to the water resource availability of the Biscayne aquifer as a result of the withdrawal of the recommended allocation is considered to be minimal.

Biscayne Aquifer-Eastern (Airport) Wellfield

Land surface elevation at the Eastern (Airport) Wellfield is approximately 19 feet NGVD. The base of the Biscayne aquifer is at approximately -320 feet NGVD beneath this wellfield (USGS Water Resources Investigations Report 87-4034). Water level data from the Project's monitor well SWI1S indicates that the average water level in the Biscayne aquifer for the period of record from November 1997 through June 2020 is approximately 5.0 feet NGVD. There are no changes to the historic seasonal limits for withdrawals from the Eastern (Airport) Wellfield and no reported harm to the water resource availability of the Biscayne aquifer. Therefore, the potential for harm to occur

to the water resource availability of the Biscayne aquifer as a result of the withdrawal of the recommended allocation is considered to be minimal.

Existing Legal Users

Biscayne Aquifer-Western (Palm-Aire) Wellfield

The nearest existing legal users of the Biscayne aquifer to the Western (Palm-Aire) Wellfield are Palm Aire (Water Use Permit 06-04509-W) and Atlantico at Palm Aire (Water Use Permit 06-07307-W), which are the site of some of the Project's production wells. Model results indicate that approximately 3.0 feet of cumulative drawdown may occur at the Western (Palm-Aire) Wellfield as a result of the increase in the wellfield's withdrawals (Exhibit 8B). Approximately 0.3 feet of additional drawdown (beyond the base condition) may occur in the immediate vicinity of the wellfield (Exhibit 7B). Withdrawals above the base condition will be offset with water from the C-51 Reservoir, Phase 1. Therefore, the potential for harm to occur to the existing legal users as a result of the withdrawal of the recommended allocation is considered minimal.

Biscayne Aquifer-Eastern (Airport) Wellfield

The nearest existing legal users of the Biscayne aquifer to the Eastern (Airport) Wellfield are Copans Auto Center (Water Use Permit 06-04096-W) whose well is located between the Project's Wells 16 and 17, My Storage Bin LLC (Water Use Permit 06-06674-W) whose well is located approximately 650 feet south of the Project's Well 3R, GB Real Estate (Water Use Permit 06-04961-W) whose well is located approximately 700 feet west of the Project's Well 2, and Atlantic Vocational & Pompano Beach Middle (Water Use Permit 06-05134-W) whose well is located approximately 800 feet east of the Project's Well 8. There are no changes to the historical seasonal withdrawal limits for the Eastern (Airport) Wellfield and no reported harm to existing legal users. Therefore, the potential for harm to occur to the existing legal users as a result of the withdrawal of the recommended allocation is considered minimal.

Existing Off Site Land Uses

Biscayne Aquifer-Western (Palm-Aire) Wellfield

Land uses that are dependent upon water being on or near land surface and that existed prior to this application are protected from harm. The Western (Palm-Aire) Wellfield is bordered by residential neighborhoods and commercial properties. Groundwater modeling shows approximately 0.3 feet of additional drawdown (beyond the base condition) may occur in the immediate vicinity of the wellfield. This amount of drawdown should not affect users withdrawing water from surface water features or harm surface water management systems. Withdrawals above the base condition will be offset with water from the C-51 Reservoir, Phase 1. Therefore, pursuant to Subsection 3.6.2 of the AH, the use is not expected to result in significant reduction in water levels on the property of an existing offsite land use to the extent that: the designed function of a water body and related surface water management improvements are damaged (not including aesthetic values); or result in damage to

agriculture, including damage resulting from reduction in soil moisture resulting from water use, or land collapse or subsidence caused by reduction in water levels associated with water use.

Biscayne Aquifer-Eastern (Airport) Wellfield

Land uses that are dependent upon water being on or near land surface and that existed prior to this application are protected from harm. The Eastern (airport) Wellfield is bordered by an airport, a golf course, and commercial properties. There are no changes to the historical seasonal withdrawal limits for the Eastern (Airport) Wellfield. Therefore, pursuant to Subsection 3.6.2 of the AH, the use is not expected to result in significant reduction in water levels on the property of an existing offsite land use to the extent that: the designed function of a water body and related surface water management improvements are damaged (not including aesthetic values); or result in damage to agriculture, including damage resulting from reduction in soil moisture resulting from water use, or land collapse or subsidence caused by reduction in water levels associated with water use.

Migration of Saline Water

Biscayne Aquifer-Western (Palm-Aire) Wellfield

The Western (Palm-Aire) Wellfield is located approximately 3 miles west of structure G-57, the eastward salinity structure on the Pompano Canal. Structures S-37A and S-37B are located on the C-14 (Cypress Creek) Canal and have optimum headwater stages of 3.5 feet NGVD and 7.5 feet NGVD, respectively. Model results indicate that the 0.1-foot net drawdown contour from the increase in wellfield withdrawals does not reach the saline water interface (chloride concentration greater than 250 milligrams per liter). The Project has two monitor wells at the Western (Palm-Aire) Wellfield. Water level and water quality data are collected from the monitor wells on a monthly basis and shall continue to be submitted to the District quarterly. Pursuant to Subsection 3.4 of the AH, the proposed use in not expected to cause further net inflow of groundwater from the saline water source toward the withdrawal point. In addition, withdrawals above the base condition will be offset with water from the C-51 Reservoir, Phase 1. Therefore, the potential for saline intrusion or upconing to occur as a result of the withdrawal of the recommended allocation is considered minimal.

Biscayne Aquifer-Eastern (Airport) Wellfield

The Eastern (Airport) Wellfield is located approximately 1.6 miles west of the Intracoastal Waterway and approximately 0.25 miles west of the saline water interface (chloride concentration greater than 250 milligrams per liter). The Project has a saline water intrusion monitoring network at the Eastern (Airport) Wellfield comprised of 16 monitor wells across multiple shallow and deep intervals. Water level and water quality data are collected from the monitor wells on a monthly basis and shall continue to be submitted to the District quarterly. Conductance data from the Project's monitor wells has remained stable since 2006. Chloride data from USGS Well G-2445, located approximately 0.6 miles east of the Eastern (Airport) Wellfield production wells, indicates that chloride concentration has remained stable since 2000 and has

remained below 275 milligrams per liter since 2003. There are no changes to the historic seasonal wellfield limits for the Eastern (Airport) Wellfield. However, withdrawals from the Eastern (Airport) Wellfield will increase over time above the historic average use, based on projected demands. If data shows an increasing trend in chloride concentration data in the Eastern (Airport) Wellfield monitor wells with a correlating increase in withdrawals from the Eastern (Airport) Wellfield, the Permittee shall submit a saline water intrusion action plan to the District. Pursuant to Subsection 3.4 of the AH, the proposed use in not expected to cause further net inflow of groundwater from the saline water source toward the withdrawal point. Therefore, the potential for saline intrusion or upconing to occur as a result of the withdrawal of the recommended allocation is considered minimal.

Wetland Environments

Biscayne Aquifer-Western (Palm-Aire) Wellfield

There are a few isolated jurisdictional wetland areas located within the vicinity of the Western (Palm-Aire) Wellfield which are depicted on Exhibit 9. The Broward County Fern Forest Nature Center, which contains wetlands for which Broward County maintains the hydrology artificially by pumping water from the C-14 Canal, is the closest wetland area to the wellfield. A conservative model which considers all existing legal users whose areas of influence overlap with the area of influence of this water use, simulating a 90-day, no recharge scenario for 1-in-10-year drought conditions, predicts that a maximum of 0.1 foot of additional drawdown could potentially occur in the Biscayne aquifer at the edge of the Broward County Fern Forest Natural Center.

The other wetlands within the vicinity of the wellfield are hydraulically buffered by the extensive network of canals located between the wetlands and the withdrawal facilities. Additionally, the increased withdrawals authorized under this permit will be offset by the surface water deliveries from the C-51 Reservoir, Phase 1 to the C-14 Canal.

Based upon application of the narrative standard that the hydrologic alteration of the water use shall not adversely impact the values of wetland functions so as to cause harm to the abundance, diversity and habitat of fish, wildlife and listed species, the potential for harm to occur to wetlands as a result of the authorized withdrawal of the recommended allocation is considered minimal.

Biscayne Aquifer-Eastern (Airport) Wellfield

There are no isolated state jurisdictional wetlands or other surface waters located within the vicinity of the Airport Wellfield. Therefore, there is no potential for harm to occur to wetlands and other surface waters as a result of the continued withdrawal of the recommended allocation.

Sources of Pollution

Biscayne Aquifer-Western (Palm-Aire) Wellfield

Operation of the wellfields are subject to the requirements of the Broward County

WATER RESOURCE IMPACT EVALUATION (CONTINUED)

Wellfield Protection Ordinance (WPO). The WPO provides protection by setting criteria for regulating the use, handling, and storage of regulated substances which could impair present and future public potable water supply wells and wellfields. There are several potential sources of pollution located within one mile of the Western (Palm-Aire) Wellfield. Less than 1.0 foot of cumulative drawdown may occur at the nearest potential source of contamination, and the wellfields are protected by the Broward County WPO. In addition, increased withdrawals from the Western (Palm-Aire) Wellfield above the base condition will be offset with water deliveries from the C-51 Reservoir, Phase 1. Therefore, the potential for movement of contaminants, if present, from known pollution sources as a result of the withdrawal of the recommended allocation is considered minimal.

Biscayne Aquifer-Eastern (Airport) Wellfield

The nearest known potential sources of contamination to the Eastern (Airport) Wellfield are Twin Oil Co (Florida Department of Environmental Protection [FDEP] ID 8841371), located approximately 300 feet west of Well 16, Atlantic Exterminators Inc. (FDEP ID ERIC_10367), located approximately 400 feet southwest of Well 6, and Marathon (FDEP ID 8502398) located approximately 500 feet northwest of Well 5. There are no changes to the historical seasonal withdrawal limits for the Eastern (Airport) Wellfield and no reported migration of pollution. In addition, the wellfield is protected by the Broward County WPO. Therefore, the potential for movement of contaminants, if present, from known pollution sources as a result of the withdrawal of the recommended allocation is considered minimal.

ADDITIONAL INFORMATION

Regional Issues

Minimum Flows and Levels

The Biscayne aquifer is a minimum flows and levels (MFL) water body covered by a prevention strategy set forth in Rule 40E-8, Florida Administrative Code (F.A.C.), and the Lower East Coast Water Supply Plan. The Biscayne aquifer MFL is defined as the water level which results in movement of the saltwater interface landward to the extent the water quality of an established withdrawal point is insufficient to serve as a water supply source. As discussed in the Migration of Saline Water section of this staff report, this Project is not expected to affect landward movement of the saltwater interface. Therefore, the recommended allocation is consistent with the Biscayne aquifer MFL Prevention Plan.

The MFLs for Everglades Waterbodies, identifying the point at which further withdrawals would cause significant harm, are set forth in Rule 40E-8.221(3), F.A.C. The Everglades MFL Waterbodies are in recovery as identified in Rule 40E-8.421(1) and (2), F.A.C. The primary component of the MFL recovery strategy is implementation of the Everglades restoration projects, including the Comprehensive Everglades Restoration Plan (CERP). The Everglades MFL recovery strategy also includes

limitations on impacts to the MFL Waterbodies due to consumptive use permit withdrawals in Subsections 3.2.1.E and 3.9.1 of the AH. The Permittee has demonstrated the withdrawal is consistent with the recovery strategy, consistent with Subsection 3.9.1.B.2 of the AH.

Regional Water Availability

The Permittee has requested an increase in their base condition water use through the addition of 2.0 MGD of water from the C-51 Reservoir, Phase 1. The Permittee proposes the use of an offset and/or alternative water supply source to meet future demands above their base condition water use. Pursuant to Subsection 3.2.1.E of the AH, the Project will not cause a net increase in the volume or cause an increase in volume of change in timing of withdrawals from the Lower East Coast Waterbodies over the Project's base condition water uses that existed on April 1, 2006.

Project Site Issues

Legal Control and Land Use

The City of Pompano Beach maintains legal control over the Project site, pursuant to Subsection 2.1.1 of the AH. All withdrawal facilities are located within the Project boundaries. The allocation requested for public water supply is compatible with the multiple land use categories in the vicinity.

Water Conservation Plan

The Permittee has implemented the elements of a Standard Water Conservation Plan, pursuant to Subsection 2.3.2.F.1 of the AH. Elements of the Water Conservation Plan implemented include Public Education Programs, Outdoor Water Conservation Programs, Conservation Water Billing Structures, Water Loss Reduction Programs, and Indoor Water Conservation Programs. Details of the plan can be found in the application file for Water Use Permit Application 200930-9.

Potential Use of Reclaimed Water

The City of Pompano Beach treats secondary effluent from the Broward County North Regional Wastewater Treatment Plant. The OASIS (Our Alternative Supply Irrigation System) infrastructure provides a viable alternative irrigation source throughout the Project's service area. To date, the City of Pompano Beach has designed and installed approximately 32 miles of reuse water main and currently installs approximately 10,000 linear feet of reuse mains per year (equivalent to approximately 180 eligible connections). The City of Pompano Beach intends to expand the reuse water service area in the future. The current reclaimed water service area is shown on Exhibit 10.

Permit Duration

Staff recommends a water use permit duration as follows:

Consistent with Subsection 1.5.2.C.3.a of the AH, the base condition allocation from the Biscayne aquifer (18.39 MGD) shall have a duration of 20 years from the date of permit issuance.

ADDITIONAL INFORMATION (CONTINUED)

Consistent with Florida Statute 373.236(6)(a), a water use permit may be issued for a period of up to 50 years to entities that have entered into an agreement with a landowner for the purpose of more efficiently pursuing alternative public water supply development projects. The C-51 Reservoir, Phase 1 consumptive water use permit issued by the FDEP has an expiration date of December 27, 2065. Therefore, the allocation of water above the base condition water use served by offset water from the C-51 Reservoir, Phase 1 (2 MGD) will have an expiration date of December 27, 2065.

ENVIRONMENTAL RESOURCE PERMIT STATUS:

Not Applicable

RIGHT OF WAY PERMIT STATUS:

Not Applicable

RECOMMENDATIONS

Project Name: CITY OF POMPANO BEACH

Application Number: 200930-9

Permit Number: 06-00070-W

RECOMMENDATION

The use of groundwater from the Biscayne aquifer to supply raw water for public water supply use with an annual allocation of 7,200.04 million gallons.

STAFF EVALUATION

REVIEWER:

Trisha Stone, NRM

Stephanie Lancaster, P.G., WU

SUPERVISOR:

Barbara J. Conmy, NRM

Nicholas M. Vitani, P.G., WU

WATER USE BUREAU CHIEF:

Simon Sunderland, P.G.

Date: December 7, 2020

SPECIAL PERMIT CONDITIONS

1. This permit is issued to:
   CITY OF POMPANO BEACH
   UTILITIES DEPARTMENT
   1205 N.E. 5TH AVENUE
   POMPANO BEACH, FL 33060

2. This permit shall expire on December 27, 2065.

   The base condition allocation from the Biscayne aquifer shall expire on December 8, 2040.

3. Use classification is:

   Public Water Supply

4. Source classification is:

   Groundwater from:
   Biscayne Aquifer

5. Allocation:

   Total annual allocation is 7,200.04 million gallons (MG). (19.73 MGD).

   Total maximum monthly allocation is 690.00 MG.

   Until the Project has received offset water to prevent a net increase in the volume or cause a change in timing on a monthly basis of surface and groundwater withdrawn from the Lower East Coast Everglades Waterbodies, the total allocation from the Biscayne aquifer shall be limited to the base condition allocation of:

   6,711.90 MGY (18.39 MGD)

   659.69 MG maximum month.

   Between November 18, 2040 and December 27, 2065 without renewal of the base condition allocation, withdrawals from the Biscayne aquifer that are offset from the C-51 Reservoir, Phase 1 Project shall be limited to:

   Annual allocation shall not exceed 730 MG (2 MGD).

   Maximum monthly allocation shall not exceed 71.74 MG.

SPECIAL PERMIT CONDITIONS

Withdrawals from the Biscayne aquifer are further restricted by wellfield as follows:

Western (Palm-Aire) Wellfield:

Annual allocation is 4,015.00 MG (11 MGD).

Maximum month allocation is 394.80 MG.

When the required volume of offset water has been delivered to the Project, the following limits from the Western (Palm-Aire) Wellfield shall apply:

Annual allocation is 4,503.04 MG (12.34 MGD).

Maximum month allocation is 495.33 MG.

Eastern (Airport) Wellfield:

Annual allocation is 2,697.00 MGY (7.39 MGD).

Monthly withdrawals from the Eastern (Airport) Wellfield shall not exceed 186 MG for November 1st through May 31st of each year.

Monthly withdrawals from the Eastern (Airport) Wellfield shall not exceed 279 MG for June 1st through October 31st of each year.

These allocations represent the amount of water required to meet the water demands as a result of a rainfall deficit during a drought with the probability of recurring one year in ten. The Permittee shall not exceed these allocations in hydrologic conditions less than a 1-in-10 year drought event. Compliance with the annual allocation is based on the quantity withdrawn over a 12-month time period. Compliance with the maximum monthly allocation is based on the greatest quantity withdrawn in any single month. The annual allocation expressed in GPD or MGD is for informational purposes only.

If the rainfall deficit is more severe than that expected to recur once every ten years, the withdrawals shall not exceed that amount necessary to continue to meet the reasonable-beneficial demands under such conditions, provided no harm to the water resources occur and:

1. All other conditions of the permit are met; and
2. The withdrawal is otherwise consistent with applicable declared Water Shortage Orders in effect pursuant to Chapter 40E-21, F.A.C.

6. Withdrawal facilities:

Groundwater - Proposed:

SPECIAL PERMIT CONDITIONS

1 - 16" X 107' X 1500 GPM Well Cased To 87 Feet

Groundwater - Existing:

1 - 16" X 131' X 1500 GPM Well Cased To 97 Feet
1 - 16" X 114' X 1500 GPM Well Cased To 114 Feet
4 - 16" X 153' X 2100 GPM Wells Cased To 80 Feet
1 - 16" X 153' X 1600 GPM Well Cased To 80 Feet
1 - 16" X 140' X 1800 GPM Well With Unknown Cased Depth
1 - 16" X 130' X 2400 GPM Well Cased To 72 Feet
1 - 16" X 123' X 1500 GPM Well Cased To 90 Feet
1 - 18" X 130' X 2000 GPM Well Cased To 113.5 Feet
1 - 16" X 136' X 1500 GPM Well With Unknown Cased Depth
1 - 16" X 108' X 1500 GPM Well With Unknown Cased Depth
1 - 16" X 158' X 2100 GPM Well Cased To 78 Feet
1 - 14" X 156' X 2200 GPM Well Cased To 100 Feet
1 - 16" X 127' X 1500 GPM Well Cased To 88 Feet
2 - 16" X 90' X 1500 GPM Wells Cased To 90 Feet
1 - 16" X 150' X 2400 GPM Well Cased To 76 Feet
1 - 16" X 154' X 2100 GPM Well Cased To 80 Feet
1 - 16" X 153' X 2100 GPM Well Cased To 79 Feet
1 - 18" X 140' X 2000 GPM Well Cased To 115 Feet
1 - 16" X 115' X 1800 GPM Well Cased To 115 Feet
1 - 16" X 113' X 1800 GPM Well Cased To 93 Feet

7. The Permittee shall submit all data as required by the implementation schedule for each of the permit conditions to: SFWMD at www.sfwmd.gov/ePermitting, or Regulatory Support, 3301 Gun Club Road, West Palm Beach, FL 33406.

8. The Permittee must submit the appropriate application form incorporated by reference in Rule 40E-2.101, F.A.C., to the District prior to the permit expiration date in order to continue the use of water.

9. The Permittee shall secure a well construction permit prior to construction, repair, or abandonment of all wells, as described in Chapter 40E-3, F.A.C.

10. Prior to any withdrawals at the project, the Permittee shall provide the results of the calibration testing of the identified water accounting method(s) and equip all existing and proposed withdrawal facilities with approved water use accounting method(s) pursuant to Subsection 4.1.1 of the Applicant's Handbook for Water Use Permit Applications within the South Florida Water Management District.

11. Every five years from the date of last calibration, the Permittee shall submit re-

calibration data for each withdrawal facility.

12. Monthly withdrawals for each withdrawal facility shall be reported to the District quarterly. The water accounting method and means of calibration shall be stated on each report.

13. The Permittee shall notify the District within 30 days of any change in service area boundary that results in a change in demand that affects its permitted allocation. The allocation shall be modified to effectuate such change.

14. The Permittee shall maintain an accurate flow meter at the intake of the water treatment plant for the purpose of measuring daily inflow of water.

15. If at any time there is an indication that the well casing, valves, or controls leak or have become inoperative, repairs or replacement shall be made to restore the system to an operating condition. Failure to make such repairs shall be cause for filling and abandoning the well, in accordance with procedures outlined in Chapter 40E-3, F.A.C.

16. The Standard Water Conservation Plan described in Subsection 2.3.2.F.1.a of the Applicant's Handbook for Water Use Permit Applications within the South Florida Water Management District and in the application file (Application #200930-9) must continue being implemented.

17. The Permittee shall notify the District within 30 days of entering into an inter-local agreement, contract, or other similar instrument to deliver or receive water outside of its service area or to serve a demand not identified to determine the allocation described in this permit. A copy of such agreement shall be provided to the District. The monthly volume of water delivered and/or received via each inter-local agreement, contract, or other similar instrument shall be submitted to the District at the same reporting frequency as the withdrawals for each withdrawal facility required in this permit.

18. The Permittee shall implement the wellfield operating plan submitted in support of the permit application, as described in the District staff report.

19. The Permittee shall determine unaccounted-for distribution system losses (for the entire distribution system) on a monthly basis, including the way these losses are calculated. Reports shall be submitted to the District on a yearly basis and are due by April 30th of each year.

    If unaccounted for loss is greater than 10 percent for any given year, the Permittee shall submit to the District for approval, a formal leak detection program that meets the requirements of Subsection 4.1.2 of the Applicant's Handbook for Water Use Permit

Applications within the South Florida Water Management District, to address the reduction of such water loss.

20. The Permittee shall maintain an accurate flow meter at the point of discharge from the treatment plant for the purpose of measuring the daily flow of water.

21. The Permittee shall submit to the District an updated "Summary of Groundwater (Well) or Surface Water (Pump or Culvert) Facilities" table ("Section IV - Sources of Water", Water Use Permit Application Form 1379) at least 30 days prior to a change in any facility status (e.g. installation, relocation, abandonment) to include all specifications of the well, pump or culvert (e.g. actual total and cased depths, pump manufacturer and model numbers, pump types, intake depths and type of meters, culvert type, length, cross-section, diameter, height, width, invert elevation, control device, and water use accounting method).

22. The Permittee shall submit to the District an updated "Summary of Groundwater (Well) Facilities" table ("Section IV - Sources of Water", Water Use Permit Application Form 1379) within 90 days of completion of the proposed wells identifying the actual total and cased depths, pump manufacturer and model numbers, pump types, intake depths and type of meters.

23. If a proposed well location is different from a location specified in the application, the Permittee shall submit to the District an evaluation of the impact of pumpage from the proposed well location on adjacent existing legal uses, pollution sources, environmental features, the saline water interface, and water bodies one month prior to all new well construction. The Permittee is advised the proposed well locations and resulting impacts must be in compliance with all permitting criteria and performance standards in effect at that time.

24. Entities that control, either directly or indirectly, a wastewater treatment plant and/or reuse distribution system, and which have determined pursuant to Section 403.064, F.S., that use of reclaimed water is feasible, must provide the District with annual updates of the following information: (A) the status of distribution system construction, including location and capacity of lines; (B) a summary of uncommitted supplies for the next year; (C) copies of any new or amended local mandatory reclaimed water reuse zone ordinances; and (D) a list of end-users who have contracted to receive reclaimed water and the agreed upon quantity of water to be delivered.

25. Prior to the initial withdrawal above the established base condition water use permitted by offset water, authorization must be granted by the District.

26. The C-51 Reservoir Project Phase 1 is not currently fully operational. For the purpose

of this consumptive use permit, the District defines fully operational as the reservoir is fully constructed, all pumps are in place and operational, a District approved flow route to provide offsets to the Project is determined, all agreements with 298 districts are finalized, and water deliveries can be made to the Project and properly accounted for as offset water. In the event C-51 Reservoir, Phase 1 Project water is not available when demands exceed the Biscayne aquifer base condition, the Permittee shall modify the operating plan to utilize the Upper Floridan aquifer to meet the demands unable to be met by the C-51 Reservoir, Phase 1 Project.

27. Prior to receiving offset water from the C-51 Reservoir, Phase 1, the details of the location and configuration of the facility(s) to account for deliveries of offset water to offset additional withdrawals from the City of Pompano Beach Biscayne aquifer Western (Palm-Aire) Wellfield shall be submitted to the District for approval. The intent of the accounting facility is to ensure that offset water is delivered in the quantities needed and to ensure that the Permittee is obtaining the quantities of water to meet the conditions for permit issuance. Measuring flows will provide reasonable assurances that offset water deliveries are made. Using canal water level elevation data is not sufficient since the data can be influenced by many factors. Prior to the use of this facility(s), it shall be equipped with a District-approved water use accounting system and a report of calibration shall be submitted to the District prior to the delivery of offset water, pursuant to Subsection 4.1 of the AH. In addition, a report of recalibration for the facility shall be submitted to the District for this facility every five years from each previous calibration, continuing at five-year increments. This condition does not require the Permittee to construct a structure or water accounting apparatus to quantify offset deliveries of C-51 Reservoir, Phase 1 water. The use of an appropriately located existing facility is sufficient. Similarly, the calibration reports for the structure or water accounting facility can be obtained from its owner and provided by the Permittee to the District.

28. The Permittee shall record and submit monthly to the District the C-51 Reservoir, Phase 1 offset water use deliveries from the District approved facility. The water accounting method and means of calibration shall be stated on each report.

29. Withdrawals above the established base condition water use of 659.69 million gallons maximum month and 6,711.90 million gallons annually (18.39 million gallons per day) are only authorized if the Permittee has received the required offset water to prevent an increase in volume or change in timing of surface and groundwater withdrawn from the Lower East Coast Everglades Waterbodies over the base condition water use. Such withdrawals must be consistent with the operational plan described in Special Permit Condition 32.

30. Within 30 days of execution, the Permittee shall submit an updated signed copy of any changes made to the Agreement for Capacity Allocation in Phase 1 of the C-51

Reservoir, or similar instrument, to the District.

31. On August 31, 2021 and each year thereafter, the Permittee shall provide an annual update to the District on the progress of the C-51 Reservoir Phase 1 Project. Once the C-51 Reservoir, Phase 1 becomes fully operational, as defined herein, the Permittee shall cease submitting the annual update on the progress of the C-51 Reservoir Phase 1.

32. The Permittee acknowledges that an Operating Plan for the C-51 Reservoir, Phase 1 has not been finalized. The Permittee shall comply with the final operating plan approved by the District prior to the use of offset water above the established base condition water use.

33. Pursuant to Section 373.236(4), F.S., every ten years from the date of permit issuance, the Permittee shall submit a water use compliance report for review and approval by District Staff to SFWMD at www.sfwmd.gov/ePermitting, or Regulatory Support, 3301 Gun Club Road, West Palm Beach, FL 33406.

34. The Permittee shall implement the following saline water intrusion monitoring program:

    The Permittee shall record monthly chloride concentration for Wells SWI1D, SWI1S, SWI2-D, SWI2-S, SWI3-D, SWI3-S, SWI4-D, SWI4-S, SWI5-D, SWI5-S, SWI6-D, SWI6-S, SWI9-D, SWI9-S, SWI10-D, SWI10-S, PRW1, and PRW8. Chloride data shall be submitted to the District quarterly.

    If data shows an increasing trend in chloride levels in the Eastern (Airport) Wellfield monitor wells (SWI1D, SWI1S, SWI2-D, SWI2-S, SWI3-D, SWI3-S, SWI4-D, SWI4-S, SWI5-D, SWI5-S, SWI6-D, SWI6-S, SWI9-D, SWI9-S, SWI10-D, and SWI10-S) with a correlating increase in withdrawals from the Eastern (Airport) Wellfield, the Permittee shall submit a saline water intrusion action plan to the District.

35. The Permittee shall record monthly water level for Wells SWI1D, SWI1S, SWI2-D, SWI2-S, SWI3-D, SWI3-S, SWI4-D, SWI4-S, SWI5-D, SWI5-S, SWI6-D, SWI6-S, SWI9-D, SWI9-S, SWI10-D, SWI10-S, PRW1, and PRW8. Water level data shall be submitted to the District quarterly.

STANDARD PERMIT CONDITIONS

1. All water uses authorized by this permit shall be implemented as conditioned by this permit, including any documents incorporated by reference in a permit condition. The District may revoke this permit, in whole or in part, or take enforcement action, pursuant to Section 373.136 or 373.243, F.S., unless a permit modification has been obtained to address the noncompliance.

   The Permittee shall immediately notify the District in writing of any previously submitted material information that is later discovered to be inaccurate.

2. The Permittee is advised that this permit does not relieve any person from the requirement to obtain all necessary federal, state, local and special district authorizations.

3. The Permittee shall notify the District in writing within 30 days of any sale, transfer, or conveyance of ownership or any other loss of permitted legal control of the Project and/or related facilities from which the permitted consumptive use is made. Where Permittee's control of the land subject to the permit was demonstrated through a lease, the Permittee must either submit a new or modified lease showing that it continues to have legal control or documentation showing a transfer in control of the permitted system/project to the new landowner or new lessee. All transfers of ownership are subject to the requirements of Rule 40E-1.6107, F.A.C. Alternatively, the Permittee may surrender the consumptive use permit to the District, thereby relinquishing the right to conduct any activities under the permit.

4. Nothing in this permit should be construed to limit the authority of the District to declare a water shortage and issue orders pursuant to Chapter 373, F.S. In the event of a declared water shortage, the Permittee must adhere to the water shortage restrictions, as specified by the District. The Permittee is advised that during a water shortage, reports shall be submitted as required by District rule or order. The Permittee is advised that during a water shortage, pumpage, water levels, and water quality data shall be collected and submitted as required by District orders issued pursuant to Chapter 40E-21, F.A.C.

5. This permit does not convey to the Permittee any property rights or privileges other than those specified herein, nor relieve the permittee from complying with any applicable local government, state, or federal law, rule, or ordinance.

6. With advance notice to the Permittee, District staff with proper identification shall have permission to enter, inspect, observe, collect samples, and take measurements of permitted facilities to determine compliance with the permit conditions and permitted plans and specifications. The Permittee shall either accompany District staff onto the property or make provision for access onto the property.

7. A. The Permittee may seek modification of any term of an unexpired permit. The Permittee is advised that Section 373.239, F.S., and Rule 40E-2.331, F.A.C., are applicable to permit modifications.

   B. The Permittee shall notify the District in writing 30 days prior to any changes to the project that could potentially alter the reasonable demand reflected in the permitted allocation. Such changes include, but are not limited to, change in irrigated acreage, crop type, irrigation system, large users agreements, or water treatment method. Permittee will be required to apply for a modification of the permit for any changes in permitted allocation.

8. If any condition of the permit is violated, the permit shall be subject to review and modification, enforcement action, or revocation pursuant to Chapter 373, F.S.

9. The Permittee shall mitigate interference with existing legal uses that was caused in whole or in part by the Permittee's withdrawals, consistent with the approved mitigation plan. As necessary to offset the interference, mitigation will include pumpage reduction, replacement of the impacted individual's equipment, relocation of wells, change in withdrawal source, or other means.

   Interference to an existing legal use is defined as an impact that occurs under hydrologic conditions equal to or less severe than a 1-in-10 year drought event that results in the:

   A. Inability to withdraw water consistent with provisions of the permit, such as when remedial structural or operational actions not materially authorized by existing permits must be taken to address the interference; or

   B. Change in the quality of water pursuant to primary State Drinking Water Standards to the extent that the water can no longer be used for its authorized purpose, or such change is imminent.

10. The Permittee shall mitigate harm to the natural resources caused by the Permittee's withdrawals, as determined through reference to the conditions for permit issuance. When harm occurs, or is imminent, the District will require the Permittee to modify withdrawal rates or mitigate the harm. Harm, as determined through reference to the conditions for permit issuance includes:

    A. Reduction in ground or surface water levels that results in harmful lateral movement of the fresh water/salt water interface,

    B. Reduction in water levels that harm the hydroperiod of wetlands,

    C. Significant reduction in water levels or hydroperiod in a naturally occurring water body such as a lake or pond,

D. Harmful movement of contaminants in violation of state water quality standards, or

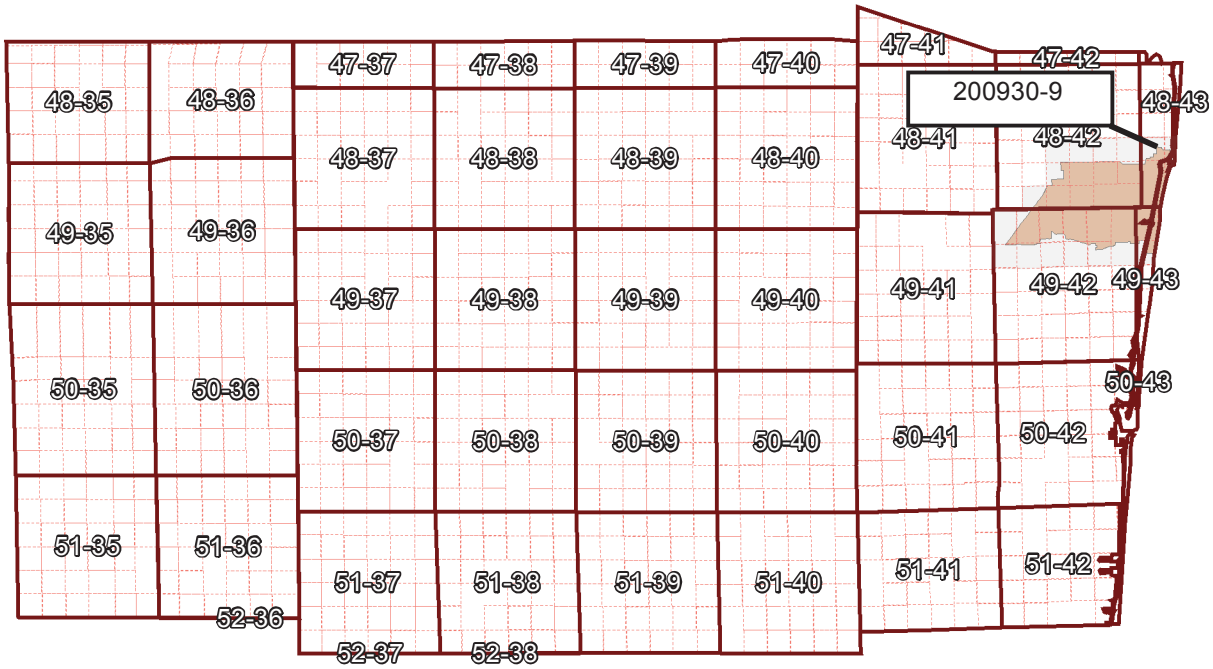
E. Harm to the natural system including damage to habitat for rare or endangered species.

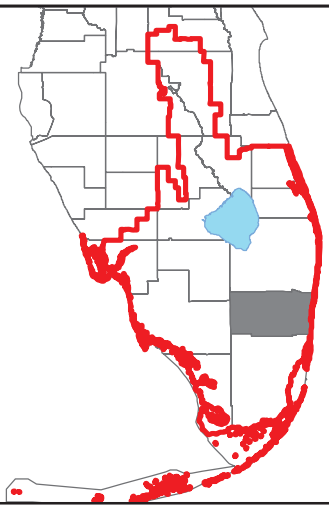
11. The Permittee shall mitigate harm to existing off-site land uses caused by the Permittee's withdrawals, as determined through reference to the conditions for permit issuance. When harm occurs, or is imminent, the District will require the Permittee to modify withdrawal rates or mitigate the harm. Harm as determined through reference to the conditions for permit issuance, includes:

    A. Significant reduction in water levels on the property to the extent that the designed function of the water body and related surface water management improvements are damaged, not including aesthetic values. The designed function of a water body is identified in the original permit or other governmental authorization issued for the construction of the water body. In cases where a permit was not required, the designed function shall be determined based on the purpose for the original construction of the water body (e.g. fill for construction, mining, drainage canal, etc.)

    B. Damage to agriculture, including damage resulting from reduction in soil moisture resulting from consumptive use; or,

    C. Land collapse or subsidence caused by reduction in water levels associated with consumptive use.





BROWARD COUNTY, FLORIDA

N

Application No: 200930-9

Permit No: 06-00070-W

Map Date: 2020-10-21

Sec 25-28,32-36 / Twp 48 / Rge 42

Sec 1-12 / Twp 49 / Rge 42

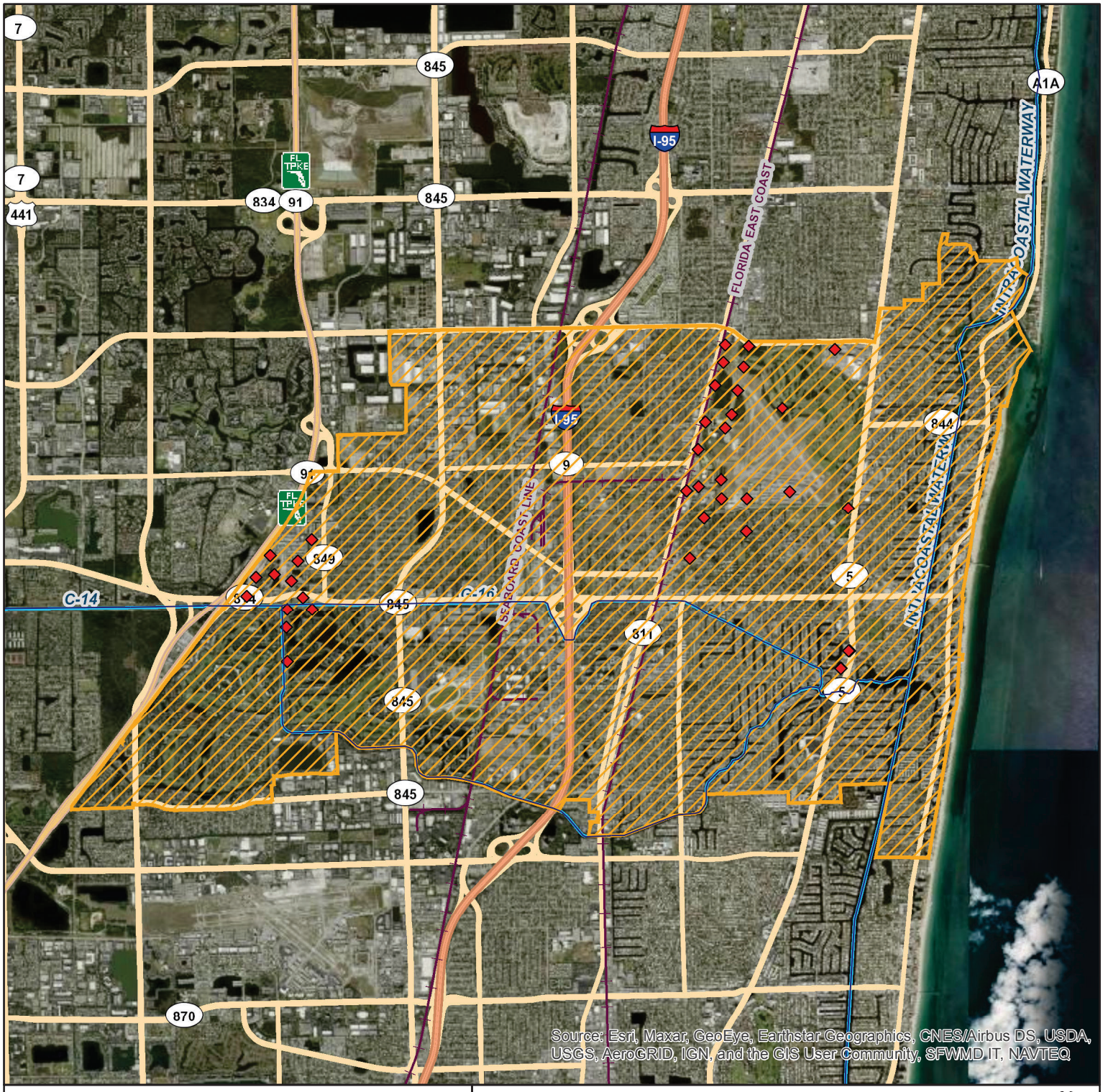
Sec 19,20,29-32 / Twp 48 / Rge 43

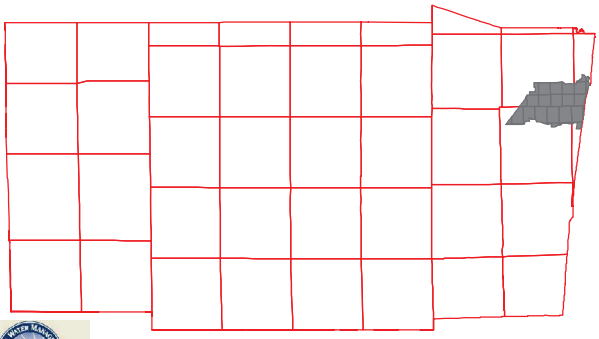
Sec 5-7 / Twp 49 / Rge 43

Project Name: CITY OF POMPANO BEACH

0 10 20 Miles

Exhibit No: 1





BROWARD COUNTY, FLORIDA

N

Well

Application

Map Date: 2020-10-21

Application No: 200930-9

Permit No: 06-00070-W

Sec 25-28,32-36 / Twp 48 / Rge 42

Sec 1-12 / Twp 49 / Rge 42

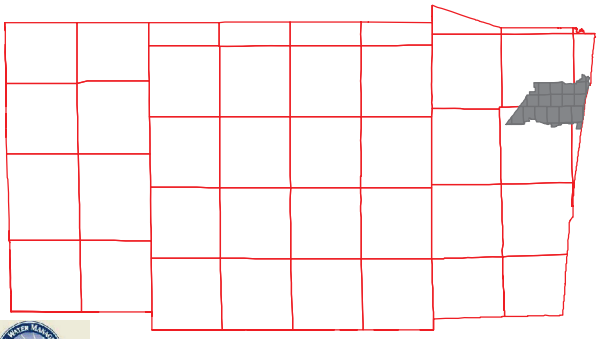
Sec 19,20,29-32 / Twp 48 / Rge 43

Sec 5-7 / Twp 49 / Rge 43

Project Name: CITY OF POMPANO BEACH

0 1.25 2.5 Miles

Exhibit No: 2



BROWARD COUNTY, FLORIDA

N

Well

Application

Map Date: 2020-10-21

Application No: 200930-9

Permit No: 06-00070-W

Sec 25-28,32-36 / Twp 48 / Rge 42

Sec 1-12 / Twp 49 / Rge 42

Sec 19,20,29-32 / Twp 48 / Rge 43

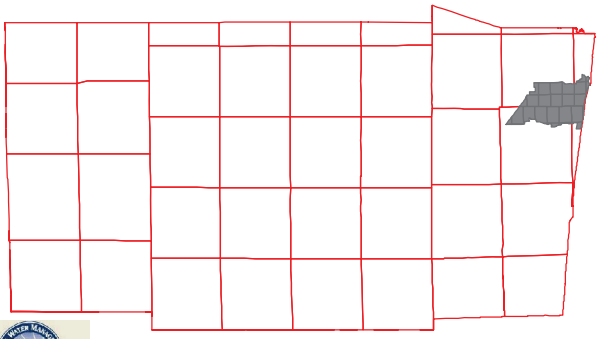
Sec 5-7 / Twp 49 / Rge 43

Project Name: CITY OF POMPANO BEACH

WESTERN (PALM-AIRE) WELLFIELD

0 0.15 0.3 Miles

Exhibit No: 3A



BROWARD COUNTY, FLORIDA

Well

Application

N

Map Date: 2020-10-21

Application No: 200930-9

Permit No: 06-00070-W

Sec 25-28,32-36 / Twp 48 / Rge 42

Sec 1-12 / Twp 49 / Rge 42

Sec 19,20,29-32 / Twp 48 / Rge 43

Sec 5-7 / Twp 49 / Rge 43

Project Name: CITY OF POMPANO BEACH

0 0.3 0.6 Miles

EASTERN (AIRPORT) WELLFIELD

Exhibit No: 3B

sfwmd.gov

TABLE - A
Description Of Wells.

Application Number: **200930-9**

Well ID	2622	2623	284524	2624	2625	2626
Name	2 (Airport e wf)	3 (Airport e wf)	3R (Airport e wf)	4 (Airport e wf)	5 (Airport e wf)	6 (Airport e wf)
Map Designator	2	3	3R	4	5	6
FLUWID Number						
Well Field	Eastern (Airport)	Eastern (Airport)	Eastern (Airport)	Eastern (Airport)	Eastern (Airport)	Eastern (Airport)
Existing/Proposed	E	A	P	E	E	E
Well Diameter(Inches)	16	16	16	16	16	14
Total Depth(feet)	136	107	107	140	108	156
Cased Depth(feet)			87			100
Facility Elev. (ft. NGVD)						
Screened Interval						
From	0	0		0	0	0
To	0	0		0	0	0
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Turbine	Turbine	Turbine	Turbine	Turbine	Turbine
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	0	0		0	0	0
Pump Capacity(GPM)	1500	0	1500	1800	1500	2200
Year Drilled						
Planar Location						
Source	Migrate	Migrate		Migrate	Migrate	Migrate
Feet East	944525	944295	943829	944269	944547	944908
Feet North	693957	695195	695020	696626	697690	699133
Accounting Method	Flow Meter	Unspecified	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Primary	Abandoned	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

Exhibit No: 4

TABLE - A
Description Of Wells.

Application Number: **200930-9**

Well ID	2627	2628	2629	2630	2631	2632
Name	7 (Airport e wf)	8 (Airport e wf)	9 (Airport e wf)	10 (Airport e wf)	11 (Airport e wf)	12 (Airport e wf)
Map Designator	7	8	9	10	11	12
FLUWID Number						
Well Field	Eastern (Airport)	Eastern (Airport)	Eastern (Airport)	Eastern (Airport)	Eastern (Airport)	Eastern (Airport)
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	16	16	16	16	16	16
Total Depth(feet)	90	90	131	113	127	123
Cased Depth(feet)	90	90	97	93	88	90
Facility Elev. (ft. NGVD)						
Screened Interval						
From	0	0	0	0	0	0
To	0	0	0	0	0	0
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Turbine	Turbine	Turbine	Turbine	Turbine	Turbine
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	0	0	0	0	0	0
Pump Capacity(GPM)	1500	1500	1500	1800	1500	1500
Year Drilled						
Planar Location						
Source	Migrate	Migrate	Migrate	Migrate	Migrate	Migrate
Feet East	945235	943968	945192	945173	945315	945573
Feet North	700037	692401	694729	695457	697457	697978
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

Exhibit No: 4

TABLE - A
Description Of Wells.

Application Number: **200930-9**

Well ID	2633	2634	2635	2636	2637	2638
Name	13 (Airport e wf)	14 (Airport e wf)	15 (Airport e wf)	16 (Airport e wf)	17 (Palm-Aire w wf)	18 (Palm-Aire w wf)
Map Designator	13	14	15	16	17	18
FLUWID Number						
Well Field	Eastern (Airport)	Eastern (Airport)	Eastern (Airport)	Eastern (Airport)	Western (Palm-Aire)	Western (Palm-Aire)
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	16	16	18	18	16	16
Total Depth(feet)	115	114	140	130	150	130
Cased Depth(feet)	115	114	115	113.5	76	72
Facility Elev. (ft. NGVD)						
Screened Interval						
From	0	0	0	0	0	0
To	0	0	0	0	0	0
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Turbine	Turbine	Turbine	Turbine	Turbine	Turbine
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	0	0	0	0	0	0
Pump Capacity(GPM)	1800	1500	2000	2000	2400	2400
Year Drilled						
Planar Location						
Source	Migrate	Migrate	Migrate	Migrate	Migrate	Migrate
Feet East	945805	946030	946224	945299	926649	927015
Feet North	698946	699866	700668	700713	690815	691544
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Primary	Primary	Primary	Primary	Secondary	Primary
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **200930-9**

Well ID	2639	2640	2641	2642	164567	164568
Name	19 (Palm-Aire w wf)	20 (Palm-Aire w wf)	21 (Palm-Aire w wf)	22 (Palm-Aire w wf)	23 (Palm-Aire w wf)	24 (Palm-Aire w wf)
Map Designator	19	20	21	22	23	24
FLUWID Number						
Well Field	Western (Palm-Aire)	Western (Palm-Aire)	Western (Palm-Aire)	Western (Palm-Aire)	Western (Palm-Aire)	Western (Palm-Aire)
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	16	16	16	16	16	16
Total Depth(feet)	158	154	153	153	153	153
Cased Depth(feet)	78	80	80	79	80	80
Facility Elev. (ft. NGVD)						
Screened Interval						
From	0	0	0	0		
To	0	0	0	0		
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Turbine	Turbine	Turbine	Turbine	Turbine	Turbine
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	0	0	0	0	0	0
Pump Capacity(GPM)	2100	2100	1600	2100	2100	2100
Year Drilled						
Planar Location						
Source	DIGITIZED	Migrate	Migrate	DIGITIZED	Migrate	Migrate
Feet East	927571	929181	928642	928402	929215	928237
Feet North	692396	693021	692193	691418	690310	690296
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **200930-9**

Well ID	164569	177414	136299	136193	136303	136302
Name	25 (Palm-Aire w wf)	26 (Palm-Aire w wf)	SWI1-S	SWI1-D	SWI2-S	SWI2-D
Map Designator	25	26	MW-1 (SWI1-S)	MW-1 (SWI1-D)	MW-2 (SWI2-S)	MW-2 (SWI2-D)
FLUWID Number						
Well Field	Western (Palm-Aire)	Western (Palm-Aire)	Eastern (Airport) WF	Eastern (Airport) WF	Eastern (Airport) WF	Eastern (Airport) WF
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	16	16				
Total Depth(feet)	153	153	120	200	120	180
Cased Depth(feet)	80	80				
Facility Elev. (ft. NGVD)						
Screened Interval						
From						
To						
Pumped Or Flowing	P	P				
Pump Type	Turbine	Turbine	None	None	None	None
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	0	0				
Pump Capacity(GPM)	2100	2100	0	0	0	0
Year Drilled						
Planar Location						
Source	Migrate	Migrate				
Feet East	928215	928252	947553	947553	946184	946184
Feet North	689598	688272	698253	698253	693443	693443
Accounting Method	Flow Meter	Flow Meter	None	None	None	None
Use Status	Primary	Primary	Monitor	Monitor	Monitor	Monitor
Water Use Type	Public Water Supply	Public Water Supply	Monitor	Monitor Water Shortage Monitoring Facility	Monitor	Monitor
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System

Exhibit No: 4

TABLE - A
Description Of Wells.

Application Number: **200930-9**

Well ID	136305	136304	136307	136306	136325	136308
Name	SWI3-S	SWI3-D	SWI4-S	SWI4-D	SWI5-S	SWI5-D
Map Designator	SW13-S	SWI3-D	MW-4 (SWI4-S)	MW-4 (SWI4-D)	MW-5 (SWI5-S)	MW-5 (SWI5-D)
FLUWID Number						
Well Field	Eastern (Airport) WF	Eastern (Airport) WF	Eastern (Airport) WF	Eastern (Airport) WF	Eastern (Airport) WF	Eastern (Airport) WF
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)						
Total Depth(feet)	120	180	120	200	120	200
Cased Depth(feet)						
Facility Elev. (ft. NGVD)						
Screened Interval						
From						
To						
Pumped Or Flowing						
Pump Type	None	None	None	None	None	None
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	0	0	0	0	0	0
Year Drilled						
Planar Location						
Source						
Feet East	950151	950151	949589	949589	946184	946184
Feet North	694391	694391	700570	700570	694742	694742
Accounting Method	None	None	None	None	None	None
Use Status	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Use Type	Monitor	Monitor	Monitor	Monitor Water Shortage Monitoring Facility	Monitor	Monitor
Aquifer	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System

TABLE - A
Description Of Wells.

Application Number: **200930-9**

Well ID	136327	136326	136333	136332	136301	136300
Name	SWI6-S	SWI6-D	SWI9-S	SWI9-D	SWI10-S	SWI10-D
Map Designator	MW-6 (SWI6-S)	MW-6 (SWI6-D)	MW-9 (SWI9-S)	MW-9 (SWI9-D)	MW-10 (SWI10-S)	MW-10 (SWI10-D)
FLUWID Number						
Well Field	Eastern (Airport) WF	Eastern (Airport) WF	Eastern (Airport) WF	Eastern (Airport) WF	Eastern (Airport) WF	Eastern (Airport) WF
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)						
Total Depth(feet)	120	200	130	140	130	140
Cased Depth(feet)						
Facility Elev. (ft. NGVD)						
Screened Interval						
From						
To						
Pumped Or Flowing						
Pump Type	None	None	None	None	None	None
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	0	0	0	0	0	0
Year Drilled						
Planar Location						
Source						
Feet East	947869	947869	949913	949904	950207	950239
Feet North	695023	695023	688160	688166	688843	688840
Accounting Method	None	None	None	None	None	None
Use Status	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Use Type	Monitor	Monitor Water Shortage Monitoring Facility	Monitor	Monitor	Monitor	Monitor
Aquifer	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System	Surficial Aquifer System

Exhibit No: 4

TABLE - A
Description Of Wells.

Application Number: **200930-9**

Well ID	136319	136320
Name	PRW1 (Palm-Alire w wf	PRW8 (Palm-Alire w wf
Map Designator	PRW1	PRW8
FLUWID Number		
Well Field	Western (Palm-Aire)	Western (Palm-Aire)
Existing/Proposed	E	E
Well Diameter(Inches)		
Total Depth(feet)	178	
Cased Depth(feet)		
Facility Elev. (ft. NGVD)		
Screened Interval		
From		
To		
Pumped Or Flowing		
Pump Type	None	None
Pump Int. Elev.		
Feet (NGVD)		
Feet (BLS)		
Pump Capacity(GPM)	0	0
Year Drilled		
Planar Location		
Source		
Feet East	928857	927740
Feet North	690769	691658
Accounting Method	None	None
Use Status	Monitor	Monitor
Water Use Type	Monitor	Monitor
Aquifer	Surficial Aquifer System	Surficial Aquifer System

Exhibit No: 4

CITY OF POMPANO BEACH - C-51 PHASE 1 - ALTERNATIVE SCHEDULE

Milestones	Milestone Dates
AGREEMENT MILESTONES	
AGREEMENT SIGNED Palm Beach Aggregates (PBA) and Pompano Beach for C-51 Storage allocation	**12/4/2019 ACTUAL**
SOLICITATION PERIOD END PBA solicitation of allocation participants	6/11/2020
PROJECT SANCTION DATE Notice is given to participants that construction may begin because permits, commitments and financing has been established	9/30/2020
PBA C-51 RESERVOIR COMPLETION SCHEDULE MILESTONES	
COMMENCEMENT OF CONSTRUCTION Construction begins	12/2020
CONSTRUCTION COMPLETE Construction completed	8/2022
COMMENCEMENT OF OPERATIONS C-51 Reservoir is fully operational *	10/2022
ALTERNATIVE MILESTONES	
DELAY OF COMMERCIAL OPERATION DATE Determination that the commercial operation date will not occur on schedule. City will initiate Alternative Water Supply (AWS) Evaluation Study Update and begin negotiation with neighboring utilities for temporary water supply.	7/2022
AWS PROJECT IMPLEMENTATION City will implement AWS project design	2031
AWS PROJECT COMPLETION	2032

*For the purpose of this consumptive use permit, the District defines fully operational as the reservoir is fully constructed, all pumps are in place and operational, a District approved flow route to provide offsets to the Project is determined as part of the operating plan, all agreements with 298 districts are finalized, and water deliveries can be made to the Project and properly accounted for as offset water.

Exhibit No: 5

CITY OF POMPANO BEACH
PAST WATER USE

Year	Eastern (Airport) Wellfield Withdrawals (MGY)	Western (Palm-Aire) Wellfield Withdrawals (MGY)	Total Annual Withdrawals (MGY)	Population	PCUR (Raw)	Max Western (Palm-Aire) Wellfield Withdrawals (MGM)	Western (Palm-Aire) Wellfield Peaking Ratio	Total Max Mo. (MGM)	Total Peaking Ratio	Finished (MGY)	Finished PCUR
2015	2,314.6	3,312.8	5,627.4	90,204	170.9	332.7	--	515.6	--	4,996.9	151.8
2016	2,454.1	3,584.3	6,038.4	91,266	181.3	421.1	--	584.2	--	4,993.2	149.9
2017	2,484.3	3,540.1	6,024.3	92,328	178.8	426.4	1.45	604.5	1.20	4,762.0	141.3
2018	2,206.2	3,778.6	5,984.8	93,390	175.6	440.6	1.40	591.9	1.19	5,314.5	155.9
2019	2,118.6	3,450.7	5,569.3	94,452	161.5	322.2	1.12	490.1	1.06	4,901.0	142.2
Average:	2,315.6	3,533.3	5,848.9	92,328	173.6	388.6	1.32	557.3	1.15	4,993.5	148.2

2015 - 2016 data in 2020 Facilities Work Plan
2017 - 2019 data in Annual Water Loss Reports

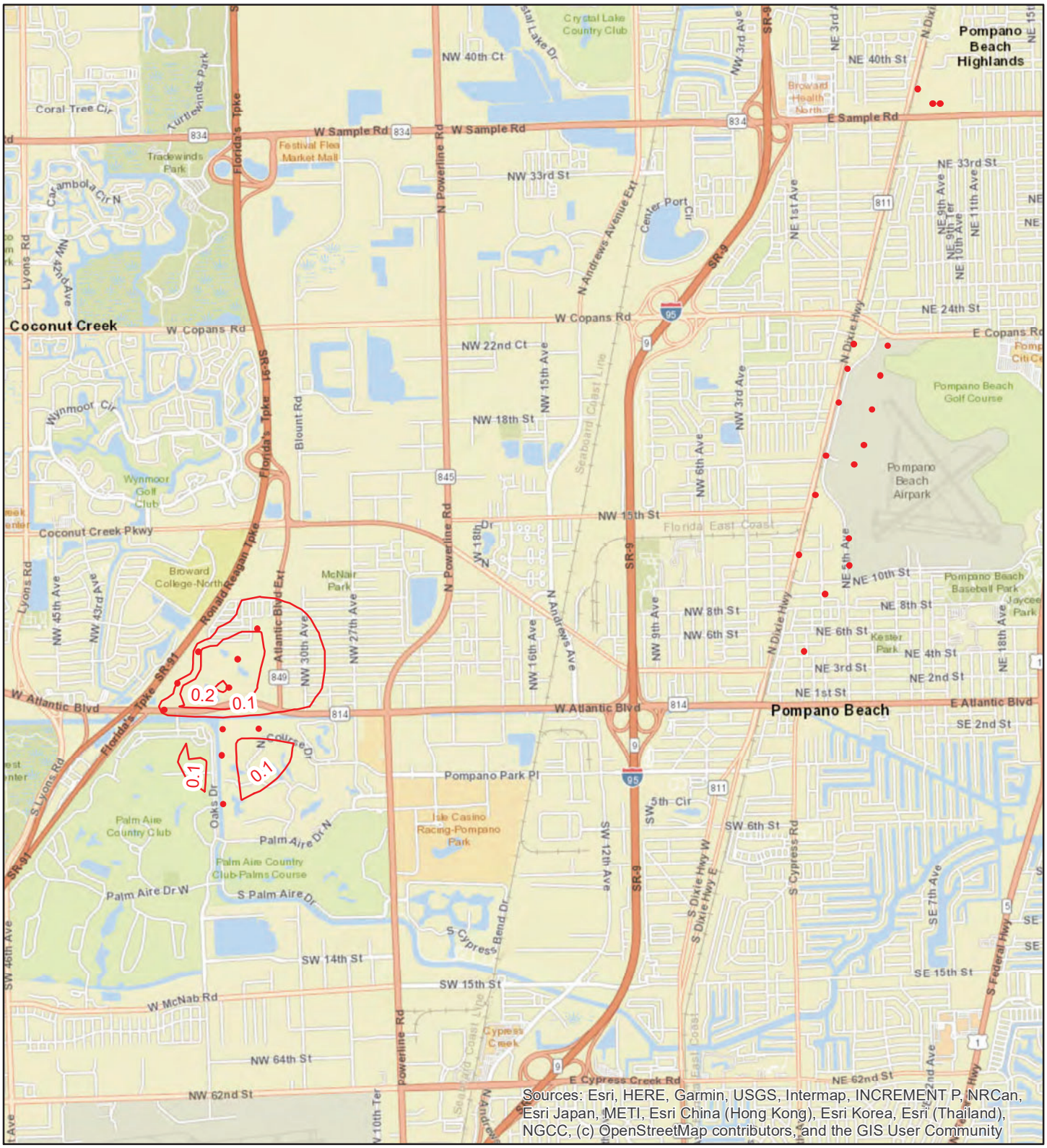
Exhibit No. 6A

CITY OF POMPANO BEACH
PROJECTED WATER USE DEMANDS

YEAR	POPULATION	PCUR (RAW)	TOTAL RAW WATER DEMANDS (MGD)	EASTERN (AIRPORT WELLFIELD) RAW WATER DEMANDS (MGY)	WESTERN (PALM-AIRE) WELLFIED RAW WATER DEMANDS (MGY)	TOTAL RAW WATER DEMANDS (MGY)	TOTAL RAW WATER MAX-MO. PEAKING RATIO	WESTERN RAW WATER MAX-MO. PEAKING RATIO	TOTAL RAW WATER MAX-MO. DEMANDS (MGM)	EASTERN (AIRPORT) WELLFIELD FINISHED WATER (MGY)	WESTERN (PALM-AIRE) WELLFIELD FINISHED WATER (MGY)	TOTAL FINISHED WATER (MGY)
2020	95,512	173.6	16.58	2,697.00	3,330.68	6,027.68	1.15	1.32	577.65	2,602.61	2,564.62	5,167.23
2025	98,817	173.6	17.15	2,697.00	3,562.89	6,259.89	1.15	1.32	599.91	2,602.61	2,743.42	5,346.03
2030	102,122	173.6	17.73	2,697.00	3,795.10	6,492.10	1.15	1.32	622.16	2,602.61	2,922.23	5,524.83
2035	105,060	173.6	18.24	2,697.00	4,001.52	6,698.52	1.15	1.32	641.94	2,602.61	3,081.17	5,683.78
2040	107,300	173.6	18.63	2,697.00	4,158.91	6,855.91	1.15	1.32	657.02	2,602.61	3,202.36	5,804.96
2045	109,185	173.6	18.95	2,697.00	4,291.35	6,988.35	1.15	1.32	669.72	2,602.61	3,304.34	5,906.94
2050	110,605	173.6	19.20	2,697.00	4,391.12	7,088.12	1.15	1.32	679.28	2,602.61	3,381.16	5,983.76
2055	111,540	173.6	19.36	2,697.00	4,456.81	7,153.81	1.15	1.32	685.57	2,602.61	3,431.74	6,034.35
2060	111,974	173.6	19.44	2,697.00	4,487.30	7,184.30	1.15	1.32	688.50	2,602.61	3,455.22	6,057.83
2065	112,198	173.6	19.48	2,697.00	4,503.04	7,200.04	1.15	1.32	690.00	2,602.61	3,467.34	6,069.95

Wellfield	Base Condition (MGY)	Base Condition (MGD)	2065 Raw Water Demands (MGD)	2065 Raw Water Demands (MGY)	2065 Raw Water Max-Mo. Demands (MGM)
Eastern (Airport)	2,697.00	7.39	7.39	2,697.00	279.00
Western (Palm-Aire)	4,014.90	11.00	12.34	4,503.04	495.33
Total	6,711.90	18.39	19.73	7,200.04	690.00

Exhibit No. 6B



Legend

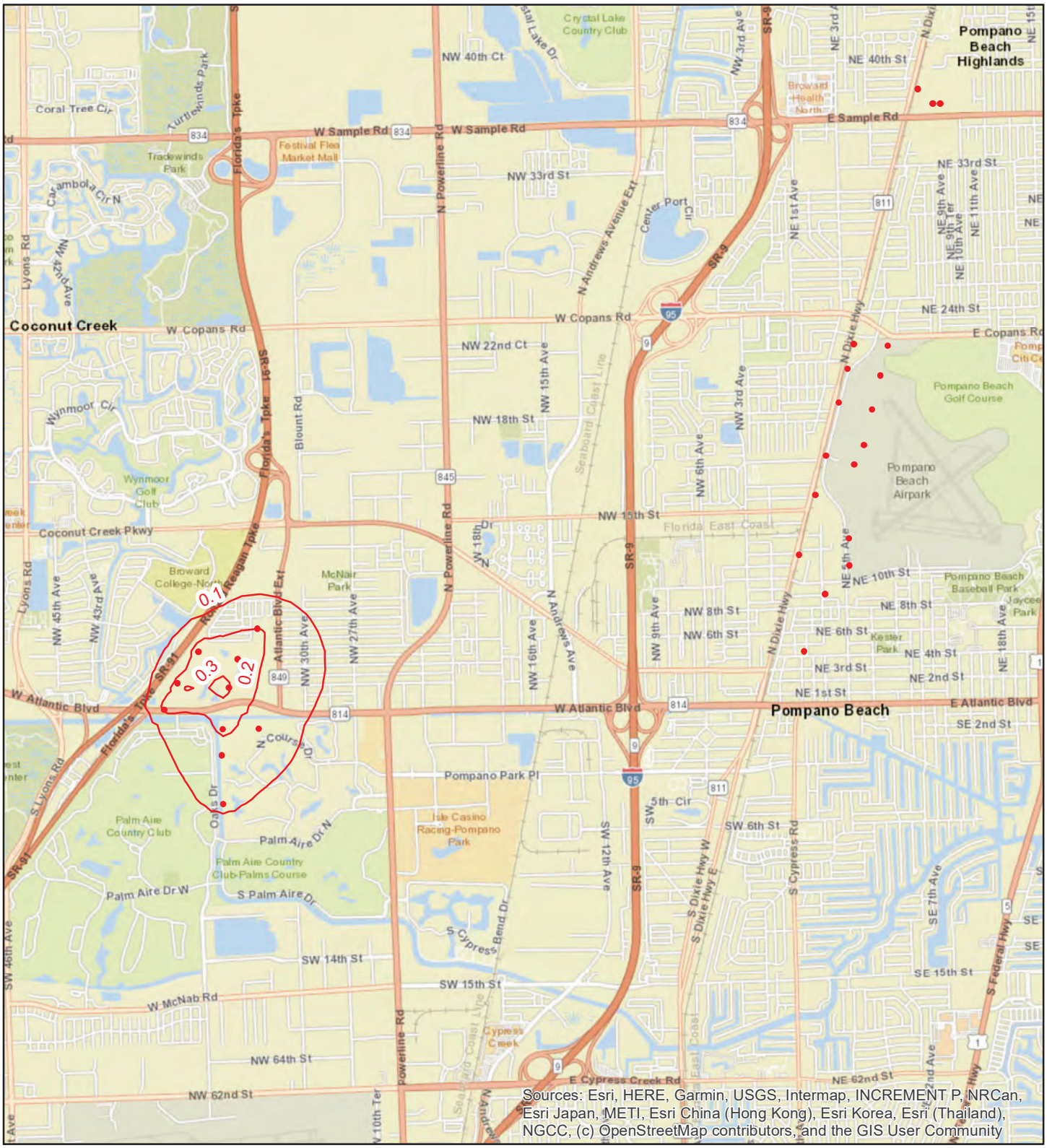
- Public Water Supply Wells
- Net Drawdown (ft): Base - Run1 (ly1)

0 0.25 0.5 1 Miles

N

Exhibit 9-1 End of 1-in-10 Dry Year Net Drawdown (ft) in Layer 1 for the Base (18.39 MGD) minus Run1 (20.04 MGD)

Exhibit No: 7A



Legend

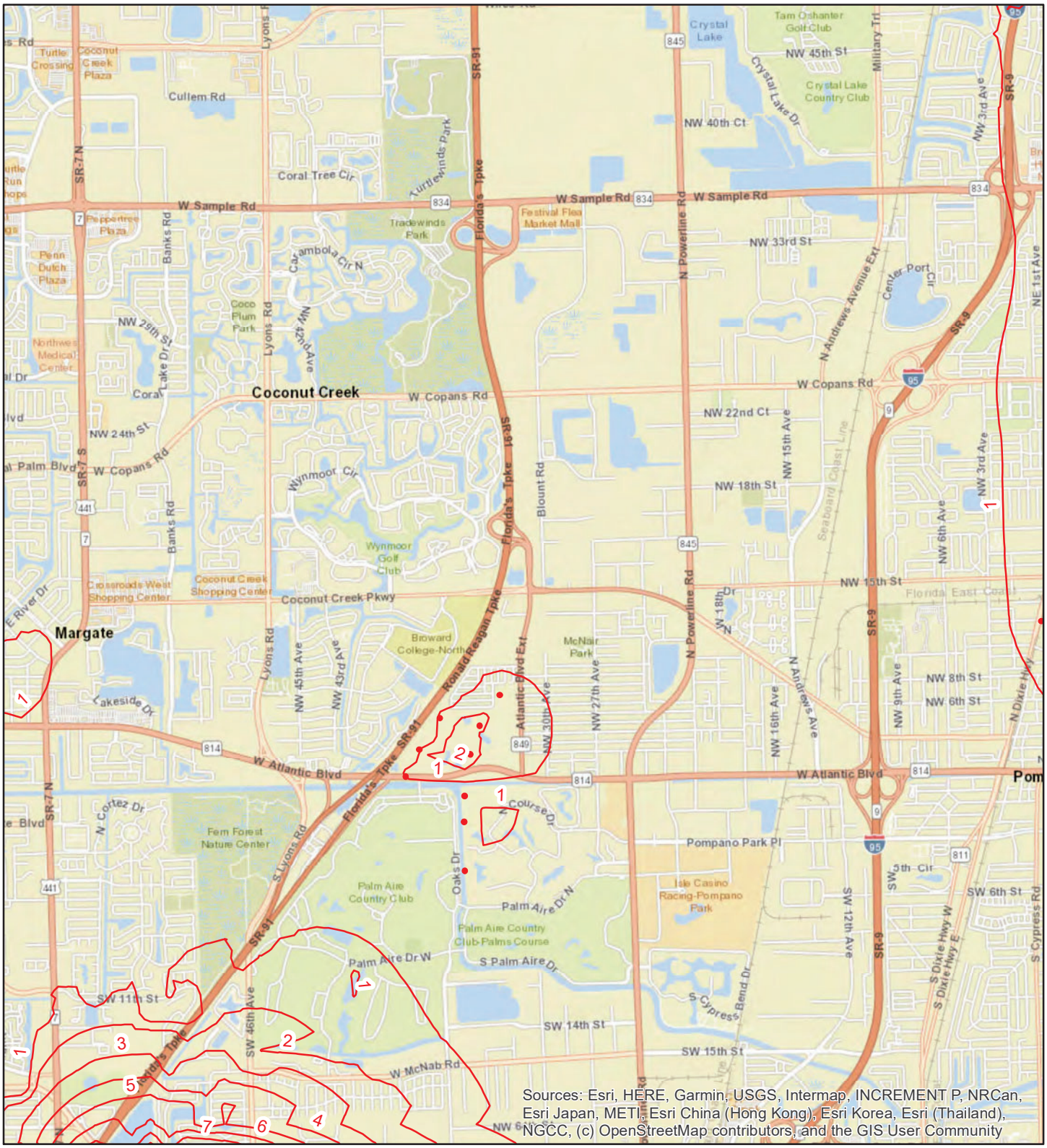
- Public Water Supply Wells
- Net Drawdown (ft): Base - Run1 (ly3)

0 0.25 0.5 1 Miles

N

Exhibit 9-2 End of 1-in-10 Dry Year Net Drawdown (ft) in Layer 3 for the Base (18.39 MGD) minus Run1 (20.04 MGD)

Exhibit No: 7B



Legend

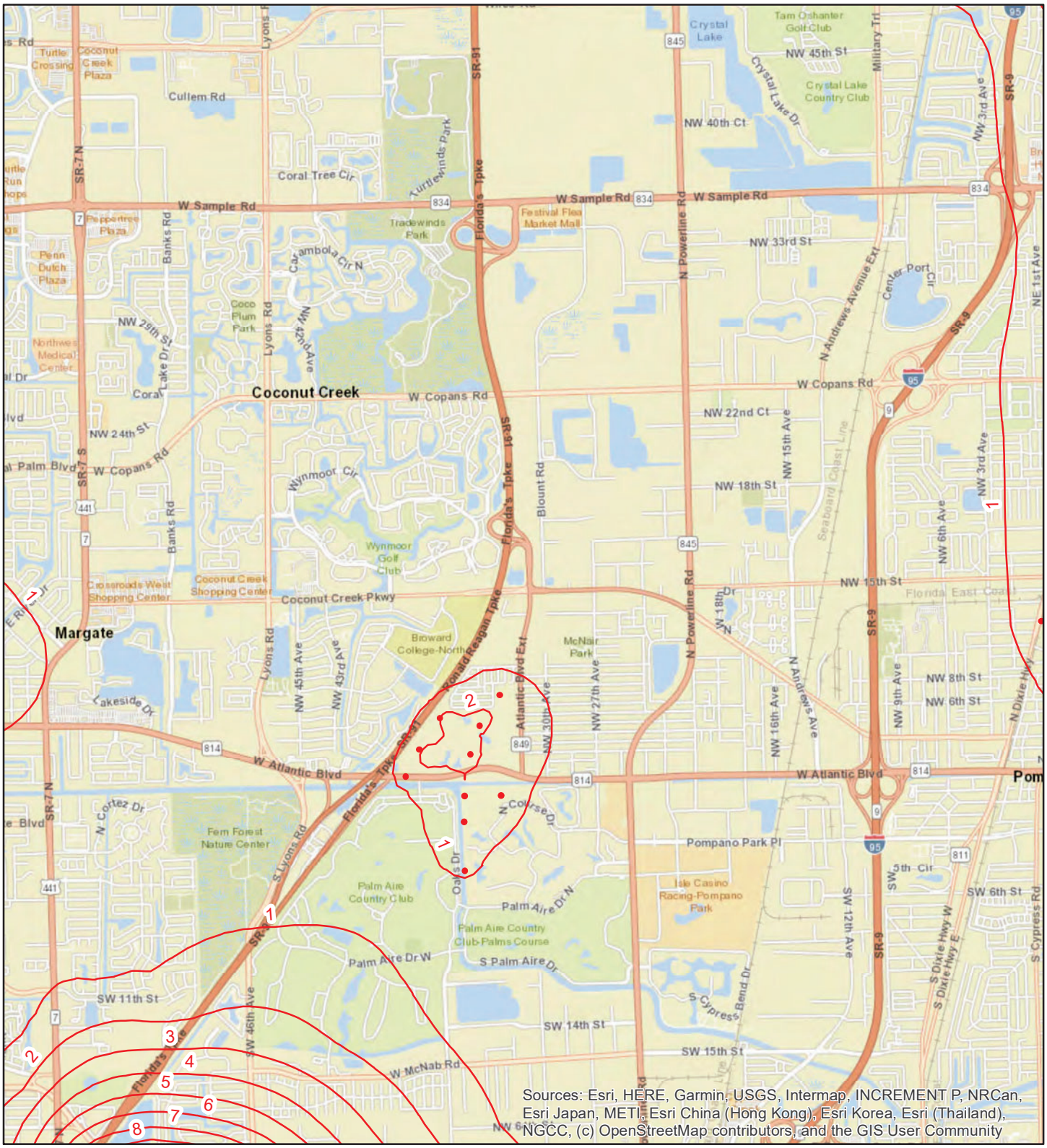
- Public Water Supply Wells
- Cumulative Drawdown (ft): Run1 (ly1)

0 0.25 0.5 1 Miles

N

Exhibit 11-1 End of 1-in-10 Dry Year Cumulative Drawdown (ft) in Layer 1 for the Run1 (20.04 MGD)

Exhibit No: 8A



Legend

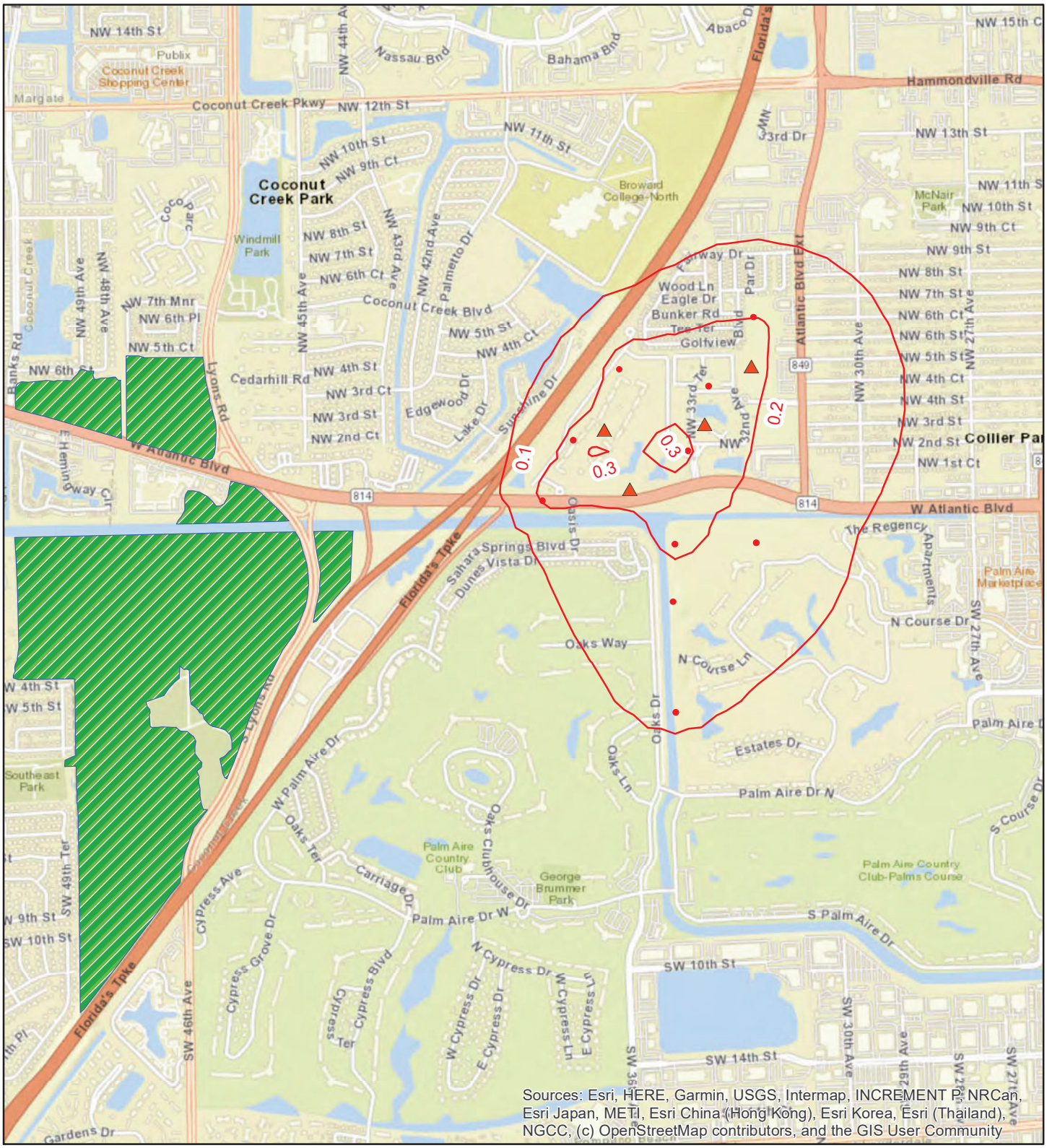
- Public Water Supply Wells
- Cumulative Drawdown (ft): Run1 (ly3)

0 0.25 0.5 1 Miles

N

Exhibit 11-2 End of 1-in-10 Dry Year Cumulative Drawdown (ft) in Layer 3 for the Run1 (20.04 MGD)

Exhibit No: 8B



Legend

- Public Water Supply Wells
- DEP Cleanup Sites
- Net Drawdown (ft): Base - Run1 (ly3)
- Wetlands

0 0.125 0.25 0.5 Miles

N

Net Drawdown (Base minus Run1) Near Pompano Palm Aire Wellfield with Potential Wetland Areas and Contaminated Sites

Exhibit No: 9

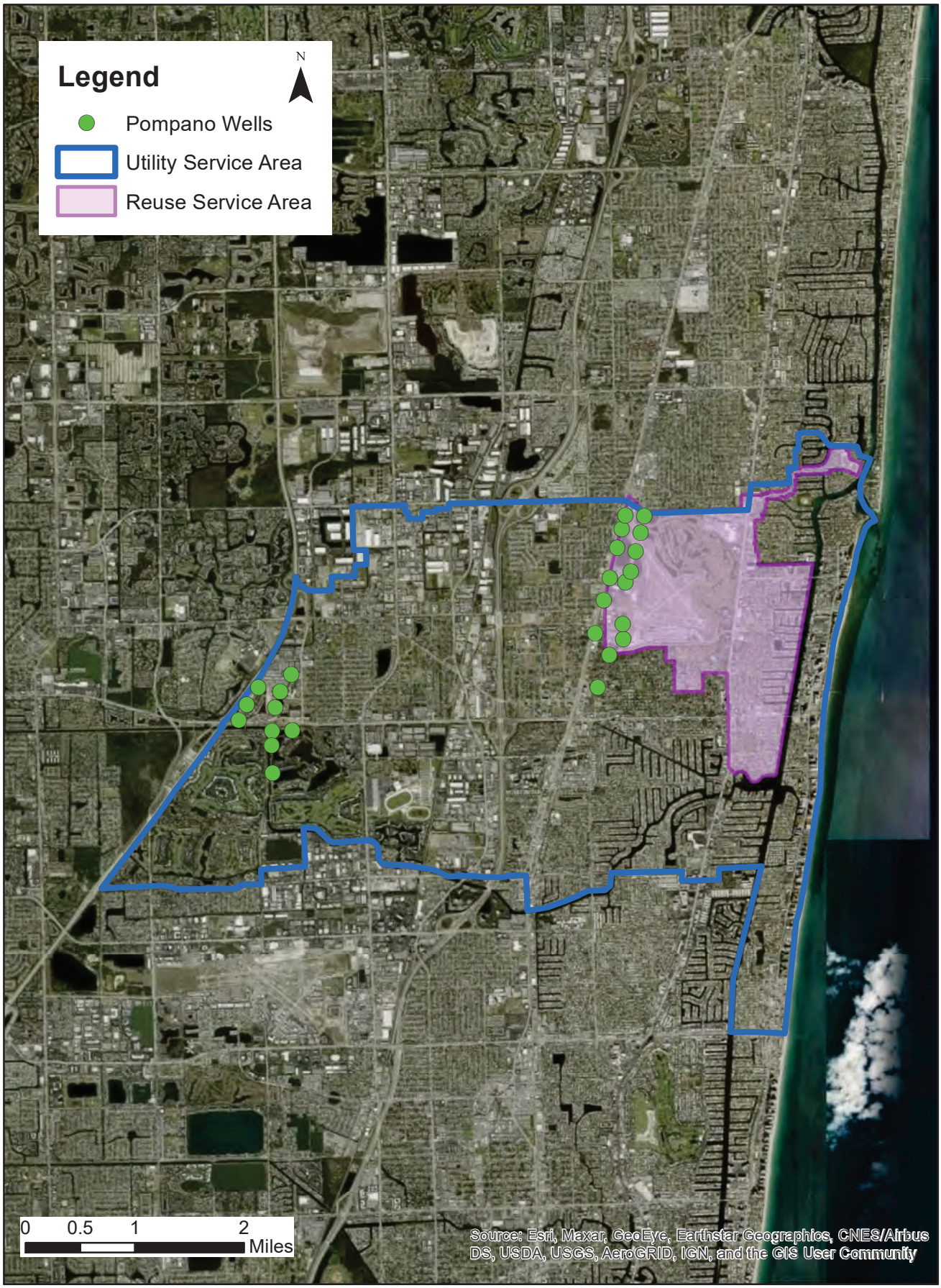


Exhibit No: 10

Requirement by Permit Condition Report

App No: 200930-9
Permit No: 06-00070-W
Project Name: CITY OF POMPANO BEACH

Permit Condition No: 11 **Permit Condition Code:** WUSTD021-2

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - 2 (Airport e wf)	Calibration report for WELL 2 (Airport e wf)	Every Five Years	Every Five Years	31-MAR-2023
WELL - 3R (Airport e wf)	Calibration report for WELL 3R (Airport e wf)	Every Five Years	Every Five Years	30-JUN-2021
WELL - 4 (Airport e wf)	Calibration report for WELL 4 (Airport e wf)	Every Five Years	Every Five Years	31-MAR-2023
WELL - 5 (Airport e wf)	Calibration report for WELL 5 (Airport e wf)	Every Five Years	Every Five Years	31-MAR-2023
WELL - 6 (Airport e wf)	Calibration report for WELL 6 (Airport e wf)	Every Five Years	Every Five Years	31-MAR-2023
WELL - 7 (Airport e wf)	Calibration report for WELL 7 (Airport e wf)	Every Five Years	Every Five Years	31-MAR-2023
WELL - 8 (Airport e wf)	Calibration report for WELL 8 (Airport e wf)	Every Five Years	Every Five Years	31-MAR-2023
WELL - 9 (Airport e wf)	Calibration report for WELL 9 (Airport e wf)	Every Five Years	Every Five Years	31-MAR-2023
WELL - 10 (Airport e wf)	Calibration report for WELL 10 (Airport e wf)	Every Five Years	Every Five Years	31-MAR-2023
WELL - 11 (Airport e wf)	Calibration report for WELL 11 (Airport e wf)	Every Five Years	Every Five Years	30-APR-2023
WELL - 12 (Airport e wf)	Calibration report for WELL 12 (Airport e wf)	Every Five Years	Every Five Years	31-MAR-2023
WELL - 13 (Airport e wf)	Calibration report for WELL 13 (Airport e wf)	Every Five Years	Every Five Years	31-MAR-2023
WELL - 14 (Airport e wf)	Calibration report for WELL 14 (Airport e wf)	Every Five Years	Every Five Years	31-MAR-2023
WELL - 15 (Airport e wf)	Calibration report for WELL 15 (Airport e wf)	Every Five Years	Every Five Years	30-APR-2023
WELL - 16 (Airport e wf)	Calibration report for WELL 16 (Airport e wf)	Every Five Years	Every Five Years	30-APR-2023
WELL - 17 (Palm-Aire w wf)	Calibration report for WELL 17 (Palm Aire w wf)	Every Five Years	Every Five Years	31-MAR-2021
WELL - 18 (Palm-Aire w wf)	Calibration report for WELL 18 (Palm Aire w wf)	Every Five Years	Every Five Years	31-MAR-2021
WELL - 19 (Palm-Aire w wf)	Calibration report for WELL 19 (Palm Aire w wf)	Every Five Years	Every Five Years	31-MAR-2021
WELL - 20 (Palm-Aire w wf)	Calibration report for WELL 20 (Palm Aire w wf)	Every Five Years	Every Five Years	31-OCT-2024
WELL - 21 (Palm-Aire w wf)	Calibration report for WELL 21 (Palm Aire w wf)	Every Five Years	Every Five Years	31-OCT-2024
WELL - 22 (Palm-Aire w wf)	Calibration report for WELL 22 (Palm Aire w wf)	Every Five Years	Every Five Years	31-OCT-2024
WELL - 23 (Palm-Aire w wf)	Calibration report for WELL 23 (Palm Aire w wf)	Every Five Years	Every Five Years	30-NOV-2024
WELL - 24 (Palm-Aire w	Calibration report for WELL 24	Every Five Years	Every Five Years	30-NOV-2024

Exhibit No: 11

Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
wf)	(Palm Aire w wf)			
WELL - 25 (Palm-Aire w wf)	Calibration report for WELL 25 (Palm aire w wf)	Every Five Years	Every Five Years	30-NOV-2023
WELL - 26 (Palm-Aire w wf)	Calibration report for WELL 26 (Palm Aire w wf)	Every Five Years	Every Five Years	31-OCT-2024

Permit Condition No: 12 **Permit Condition Code:** WUSTD022-2

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - 2 (Airport e wf)	Monthly withdrawal for WELL 2 (Airport e wf)	Monthly	Quarterly	31-JAN-2021
WELL - 3R (Airport e wf)	Monthly withdrawal for WELL 3R (Airport e wf)	Monthly	Quarterly	31-JAN-2021
WELL - 4 (Airport e wf)	Monthly withdrawal for WELL 4 (Airport e wf)	Monthly	Quarterly	31-JAN-2021
WELL - 5 (Airport e wf)	Monthly withdrawal for WELL 5 (Airport e wf)	Monthly	Quarterly	31-JAN-2021
WELL - 6 (Airport e wf)	Monthly withdrawal for WELL 6 (Airport e wf)	Monthly	Quarterly	31-JAN-2021
WELL - 7 (Airport e wf)	Monthly withdrawal for WELL 7 (Airport e wf)	Monthly	Quarterly	31-JAN-2021
WELL - 8 (Airport e wf)	Monthly withdrawal for WELL 8 (Airport e wf)	Monthly	Quarterly	31-JAN-2021
WELL - 9 (Airport e wf)	Monthly withdrawal for WELL 9 (Airport e wf)	Monthly	Quarterly	31-JAN-2021
WELL - 10 (Airport e wf)	Monthly withdrawal for WELL 10 (Airport e wf)	Monthly	Quarterly	31-JAN-2021
WELL - 11 (Airport e wf)	Monthly withdrawal for WELL 11 (Airport e wf)	Monthly	Quarterly	31-JAN-2021
WELL - 12 (Airport e wf)	Monthly withdrawal for WELL 12 (Airport e wf)	Monthly	Quarterly	31-JAN-2021
WELL - 13 (Airport e wf)	Monthly withdrawal for WELL 13 (Airport e wf)	Monthly	Quarterly	31-JAN-2021
WELL - 14 (Airport e wf)	Monthly withdrawal for WELL 14 (Airport e wf)	Monthly	Quarterly	31-JAN-2021
WELL - 15 (Airport e wf)	Monthly withdrawal for WELL 15 (Airport e wf)	Monthly	Quarterly	31-JAN-2021
WELL - 16 (Airport e wf)	Monthly withdrawal for WELL 16 (Airport e wf)	Monthly	Quarterly	31-JAN-2021
WELL - 17 (Palm-Aire w wf)	Monthly withdrawal for WELL 17 (Palm Aire w wf)	Monthly	Quarterly	31-JAN-2021
WELL - 18 (Palm-Aire w wf)	Monthly withdrawal for WELL 18 (Palm Aire w wf)	Monthly	Quarterly	31-JAN-2021
WELL - 19 (Palm-Aire w wf)	Monthly withdrawal for WELL 19 (Palm Aire w wf)	Monthly	Quarterly	31-JAN-2021
WELL - 20 (Palm-Aire w wf)	Monthly withdrawal for WELL 20 (Palm Aire w wf)	Monthly	Quarterly	31-JAN-2021
WELL - 21 (Palm-Aire w wf)	Monthly withdrawal for WELL 21 (Palm Aire w wf)	Monthly	Quarterly	31-JAN-2021
WELL - 22 (Palm-Aire w wf)	Monthly withdrawal for WELL 22 (Palm Aire w wf)	Monthly	Quarterly	31-JAN-2021
WELL - 23 (Palm-Aire w wf)	Monthly withdrawal for WELL 23 (Palm Aire w wf)	Monthly	Quarterly	31-JAN-2021

Exhibit No: 11

Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - 24 (Palm-Aire w wf)	Monthly withdrawal for WELL 24 (Palm Aire w wf)	Monthly	Quarterly	31-JAN-2021
WELL - 25 (Palm-Aire w wf)	Monthly withdrawal for WELL 25 (Palm aire w wf)	Monthly	Quarterly	31-JAN-2021
WELL - 26 (Palm-Aire w wf)	Monthly withdrawal for WELL 26 (Palm Aire w wf)	Monthly	Quarterly	31-JAN-2021

Permit Condition No: 19 **Permit Condition Code:** WUZZUD001-4

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	Unaccounted for Water Loss Report	Yearly	Yearly	30-APR-2021

Permit Condition No: 22 **Permit Condition Code:** WUWC004-1

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - 3R (Airport e wf)	Summary of Groundwater Facilities for WELL 3R (Airport e wf)	One time Only	One time Only	01-JUL-2021

Permit Condition No: 24 **Permit Condition Code:** WURWF007-2

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	Annual reclaimed water report for PERMIT	Yearly	Yearly	30-APR-2021

Permit Condition No: 25 **Permit Condition Code:** WUZZUD001-4

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	Authorization Request for withdrawals above base condition	One time Only	One time Only	01-SEP-2022

Permit Condition No: 27 **Permit Condition Code:** WUZZUD001-3

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	Authorization for facility to account for deliveries of offset water	One time Only	One time Only	01-SEP-2022
PERMIT	Calibration for facility to account for deliveries of offset water	Every Five Years	Every Five Years	01-SEP-2022

Permit Condition No: 28 **Permit Condition Code:** WUZZUD001-2

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	Offset water use deliveries	Monthly	Monthly	31-JAN-2021

Permit Condition No: 30 **Permit Condition Code:** WUZZUD001-4

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	Updated signed copy of changes made to the Agreement	One time Only	One time Only	30-SEP-2022

Permit Condition No: 31 **Permit Condition Code:** WUZZUD001-2

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	Annual update on progress of C-51 Reservoir	Yearly	Yearly	31-AUG-2021

Permit Condition No: 33 **Permit Condition Code:** WUCOMP010-1

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	Ten-Year Compliance Report for PERMIT	Every Ten Years	Every Ten Years	31-DEC-2030

Permit Condition No: 34 **Permit Condition Code:** WUSLT001-2

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - SWI1-D	Chloride for WELL SWI1D	Monthly	Quarterly	31-JAN-2021
WELL - SWI1-S	Chloride for WELL SWI1-S	Monthly	Quarterly	31-JAN-2021

Exhibit No: 11

Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - SWI2-D	Chloride for WELL SWI2-D	Monthly	Quarterly	31-JAN-2021
WELL - SWI2-S	Chloride for WELL SWI2-S	Monthly	Quarterly	31-JAN-2021
WELL - SWI3-D	Chloride for WELL SWI3-D	Monthly	Quarterly	31-JAN-2021
WELL - SWI3-S	Chloride for WELL SWI3-S	Monthly	Quarterly	31-JAN-2021
WELL - SWI4-D	Chloride for WELL SWI4-D	Monthly	Quarterly	31-JAN-2021
WELL - SWI4-S	Chloride for WELL SWI4-S	Monthly	Quarterly	31-JAN-2021
WELL - SWI5-D	Chloride for WELL SWI5-D	Monthly	Quarterly	31-JAN-2021
WELL - SWI5-S	Chloride for WELL SWI5-S	Monthly	Quarterly	31-JAN-2021
WELL - SWI6-D	Chloride for WELL SWI6-D	Monthly	Quarterly	31-JAN-2021
WELL - SWI6-S	Chloride for WELL SWI6-S	Monthly	Quarterly	31-JAN-2021
WELL - SWI9-D	Chloride for WELL SWI9-D	Monthly	Quarterly	31-JAN-2021
WELL - SWI9-S	Chloride for WELL SWI9-S	Monthly	Quarterly	31-JAN-2021
WELL - SWI10-D	Chloride for WELL SWI10-D	Monthly	Quarterly	31-JAN-2021
WELL - SWI10-S	Chloride for WELL SWI10-S	Monthly	Quarterly	31-JAN-2021
WELL - PRW1 (Palm-Alire w wf)	Chloride for WELL PRW1 (Palm-Aire w wf)	Monthly	Quarterly	31-JAN-2021
WELL - PRW8 (Palm-Alire w wf)	Chloride for WELL PRW8 (Palm-Aire w wf)	Monthly	Quarterly	31-JAN-2021

Permit Condition No: 35 **Permit Condition Code:** WUZZUD001-2

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - SWI1-D	Ground Water Level for Well SWI1-D	Monthly	Quarterly	31-JAN-2021
WELL - SWI1-S	Ground Water Level for Well SWI1-S	Monthly	Quarterly	31-JAN-2021
WELL - SWI2-D	Ground Water Level for Well SWI2-D	Monthly	Quarterly	31-JAN-2021
WELL - SWI2-S	Ground Water Level for Well SWI2-S	Monthly	Quarterly	31-JAN-2021
WELL - SWI3-D	Ground Water level for Well SWI3-D	Monthly	Quarterly	31-JAN-2021
WELL - SWI3-S	Ground Water level for Well SWI3-S	Monthly	Quarterly	31-JAN-2021
WELL - SWI4-D	Ground Water Level for Well SWI4-D	Monthly	Quarterly	31-JAN-2021
WELL - SWI4-S	Ground Water Level for Well SWI4-S	Monthly	Quarterly	31-JAN-2021
WELL - SWI5-D	Ground Water Level for Well SWI5-D	Monthly	Quarterly	31-JAN-2021
WELL - SWI5-S	Ground Water Level for Well SWI5-S	Monthly	Quarterly	31-JAN-2021
WELL - SWI6-D	Ground Water Level for Well SWI6-D	Monthly	Quarterly	31-JAN-2021
WELL - SWI6-S	Ground Water Level for Well SWI6-S	Monthly	Quarterly	31-JAN-2021
WELL - SWI9-D	Ground Water Level for Well SWI9-D	Monthly	Quarterly	31-JAN-2021
WELL - SWI9-S	Ground Water Level for Well SWI9-S	Monthly	Quarterly	31-JAN-2021
WELL - SWI10-D	Ground Water Level for Well	Monthly	Quarterly	31-JAN-2021

Exhibit No: 11

Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
	SWI10-D			
WELL - SWI10-S	Ground Water Level for Well SWI10-S	Monthly	Quarterly	31-JAN-2021
WELL - PRW1 (Palm-Alire w wf)	Ground Water Level for Well PRW1 (Palm-Aire w wf)	Monthly	Quarterly	31-JAN-2021
WELL - PRW8 (Palm-Alire w wf)	Ground Water Level for Well PRW8 (Palm-Aire w wf)	Monthly	Quarterly	31-JAN-2021

Exhibit No: 11

STAFF REPORT DISTRIBUTION LIST

CITY OF POMPANO BEACH

Application No: 200930-9

Permit No: 06-00070-W

INTERNAL DISTRIBUTION

X Stephanie Lancaster, P.G.

EXTERNAL DISTRIBUTION

X Permittee - City of Pompano Beach
X Engr Consultant - GMA Water

GOVERNMENT AGENCIES

X Broward County - Director, Water Management
X Division
X Dept of Environmental Protection - West Palm Beach
FDEP Div of Recreation and Park - District 5

OTHER INTERESTED PARTIES

X Natural Resources Defense Council

Exhibit No:12

APPENDIX D

REUSE AGREEMENT BETWEEN THE CITY OF LIGHTHOUSE POINT AND THE CITY OF POMPANO BEACH

RESOLUTION NO. 97-116

CITY OF POMPANO BEACH
Broward County, Florida

A RESOLUTION OF THE CITY COMMISSION OF THE CITY OF POMPANO BEACH, FLORIDA, APPROVING AND AUTHORIZING THE PROPER CITY OFFICIALS TO EXECUTE AN INTERLOCAL AGREEMENT BETWEEN THE CITY OF POMPANO BEACH AND THE CITY OF LIGHTHOUSE POINT PROVIDING FOR EFFLUENT WATER USE ON FEDERAL HIGHWAY FROM NORTHEAST 24TH STREET TO SAMPLE ROAD; PROVIDING AN EFFECTIVE DATE.

BE IT RESOLVED BY THE CITY COMMISSION OF THE CITY OF POMPANO BEACH, FLORIDA:

SECTION 1. That an Agreement between the City of Pompano Beach and the City of Lighthouse Point, a copy of which Agreement is attached hereto and incorporated herein by reference as if set forth in full, is hereby approved.

SECTION 2. That the proper City officials are hereby authorized to execute said Agreement between the City of Pompano Beach and the City of Lighthouse Point.

SECTION 3. This Resolution shall become effective upon passage.

PASSED AND ADOPTED this 22nd day of April, 1997.

WILLIAM F. GRIFFIN, MAYOR

ATTEST:

MARY L. CHAMBERS, CITY CLERK

GBL/jrm
4/2/97
l:reso/97-242

INTERLOCAL AGREEMENT
between
THE CITY OF LIGHTHOUSE POINT
and
THE CITY OF POMPANO BEACH
providing for
EFFLUENT WATER USE -- FEDERAL HIGHWAY -- NORTHEAST 24th STREET TO SAMPLE ROAD

This Interlocal Agreement is made and entered into between:

> **THE CITY OF LIGHTHOUSE POINT, FLORIDA,** a municipal corporation organized under the laws of the State of Florida, hereinafter sometimes referred to as "LIGHTHOUSE POINT",
>
> and
>
> **THE CITY OF POMPANO BEACH, FLORIDA,** hereinafter sometimes referred to as "POMPANO BEACH", a municipal corporation organized under the laws of the State of Florida.

WHEREAS, LIGHTHOUSE POINT is providing for the installation of a water distribution and sprinkler system in the center island medians between Northeast 24th Street and Sample Road; and

WHEREAS, POMPANO BEACH has the ability to provide reclaimed/recycled wastewater from its tertiary treatment facility located within the City of Pompano Beach to LIGHTHOUSE POINT; and

WHEREAS, LIGHTHOUSE POINT is desirous of obtaining the water from POMPANO BEACH and both cities have agreed upon the cost of the water to be paid to POMPANO BEACH by LIGHTHOUSE POINT; and

WHEREAS, both cities are authorized to enter into this Interlocal Agreement pursuant to the provisions of Florida Statute 163.01; and

WHEREAS, both cities have determined that it is mutually beneficial and in the best interests of the public to enter into this Interlocal Agreement;

NOW, THEREFORE, in consideration of the mutual covenants, promises, terms and conditions set forth herein, LIGHTHOUSE POINT and POMPANO BEACH do hereby agree as follows:

ARTICLE I
BACKGROUND PURPOSE AND INTENT

1.1 The above recitals are true and correct and are incorporated herein as if set forth in full hereunder.

1.2 POMPANO BEACH has the facilities and ability to provide recycled wastewater from their tertiary treatment facility for use by LIGHTHOUSE POINT in irrigating the median strips located within LIGHTHOUSE POINT and in the center of Federal Highway.

1.3 LIGHTHOUSE POINT has need for the recycled wastewater to be provided by POMPANO BEACH for the irrigation of the median strips located within its city between Northeast 24th Street and Sample Road.

1.4 It is the purpose of this Interlocal Agreement to accomplish the above purposes and establish the responsibilities and obligations of each of the cities with respect to this Interlocal Agreement.

ARTICLE II
TERMS OF AGREEMENT

2.1 This Interlocal Agreement shall commence upon the date that both parties have executed the same by their appropriate City officials and have filed the Agreement with the Clerk of the Circuit Court for Broward County, Florida, as required by Florida Statute Section 163.01(11). This Agreement shall continue for a period of five (5) years and shall automatically renew for successive five (5) year periods unless either City notifies the other, in writing, at least six (6) months prior to the expiration of the then current five-year period, that it no longer wises to continue with the Agreement.

2.2 Any successive renewal period shall be under the same terms and conditions as provided for in this Interlocal agreement unless both parties have executed an amendment changing the terms or conditions contained herein, and the original Agreement as thus amended shall be in force in all future renewal successive periods, except as provided in Section 2.3 herein below.

2.3 POMPANO BEACH shall recover the costs of the treatment of the effluent water and delivery to LIGHTHOUSE POINT on the basis of 64.25 cents per 1,000 gallons. LIGHTHOUSE POINT agrees to pay POMPANO BEACH for said water on said cost basis. In the event POMPANO BEACH determines that the cost of producing and delivering the 1,000 gallons of recycled wastewater has increased above the 64.25 cents it is charging LIGHTHOUSE POINT, it will present said calculations to LIGHTHOUSE POINT and the cities will agree on an adjusted cost per 1,000 gallons of recycled wastewater. Should the parties be unable to agree on an adjusted cost, then POMPANO

BEACH shall have the option of accepting cost payments as agreed or terminating this Agreement upon sixty (60) days' prior notice to LIGHTHOUSE POINT.

2.4 POMPANO BEACH agrees to furnish and install a wastewater metering device, housing, accessories, and appurtenances of a type and design selected by POMPANO BEACH, to be located at the site as defined in Exhibit "A" attached hereto. POMPANO BEACH shall retain ownership of the metering device, together with the housing, accessories, and appurtenances thereto. LIGHTHOUSE POINT shall have the right to make its own meter inspection, or to have an independent company check the metering equipment at any time during normal business hours provided, however, no such inspection shall be made unless LIGHTHOUSE POINT shall first give POMPANO BEACH notice of its intent to have the inspection made. All cost and expense of LIGHTHOUSE POINT's inspection shall be borne by LIGHTHOUSE POINT unless the meter is found to be inaccurate beyond the manufacturer's guaranteed range of accuracy, in which case the cost and expense of such inspection shall be borne by POMPANO BEACH. Normal maintenance of the metering device shall be performed by POMPANO BEACH as an expense of wastewater treatment and effluent disposal.

Both parties agree that, should the metering equipment be found to be inaccurate beyond the manufacturer's range of accuracy, the meter will be assumed to be inaccurate since the last meter check and that the following month's billing will be adjusted to show a credit or additional charge to LIGHTHOUSE POINT for that period.

Both parties agree that, if at any time the metering system shall be inoperative or in any way fails to provide information with respect to the quantity of flow, LIGHTHOUSE POINT will pay POMPANO BEACH a sum equal to the average flow of the monthly billing period prior to the date the meter became inoperative.

2.5 POMPANO BEACH shall deliver wastewater to said meter. LIGHTHOUSE POINT will cause pipes and sprinklers to be installed from the POMPANO BEACH meter north

throughout the median locations. POMPANO BEACH shall have no obligation for costs incurred with respect to the installation, maintenance or repairs of the lines or sprinkler systems, that being the sole expense of LIGHTHOUSE POINT.

2.6 POMPANO BEACH and LIGHTHOUSE POINT acknowledge that the water being used to irrigate the median strips is recycled wastewater and is the same water that is being used by POMPANO BEACH to irrigate the two Pompano Beach municipal golf courses and other Pompano Beach facilities. This water is not potable and not for human or animal consumption and shall only be used for sprinkling the median strips. LIGHTHOUSE POINT agrees to install appropriate signage to notify the public that the recycled water is being used and is not for consumption.

2.7 LIGHTHOUSE POINT has been advised by O'Leary Design Associates, P.A. that it is estimated that the average monthly water usage will be approximately 160,000 gallons based on a normal two-hour watering cycle of three days per week.

2.8 In the event, due to plant failure or other causes, the quality of the water deteriorates to a point that POMPANO BEACH does not feel that it is safe or advisable to use the same for the irrigation of its municipal golf courses or its own median strips, it will, as soon as possible, notify LIGHTHOUSE POINT of the stoppage of the water flow and, if possible, the date that it is anticipated it will recommence delivering recycled wastewater.

Both parties agree that any temporary cessation of wastewater transmission resulting from an act of God, fire, strikes, casualty, necessary maintenance work, breakdown of or injury to machinery, pumps or pipe lines, unavailabilities, insurrection or riot, or civil or military authority, shall not constitute a breach of this Agreement on the part of POMPANO BEACH and POMPANO BEACH shall not be liable to LIGHTHOUSE POINT for any damage resulting from such cessation.

2.9 POMPANO BEACH will cause its water meter to be read on a regular basis and will deliver a bill to LIGHTHOUSE POINT establishing the amount of wastewater consumption used by LIGHTHOUSE POINT for its median strip irrigation. LIGHTHOUSE POINT agrees to pay said invoice within two weeks after receipt of the same.

2.10 LIGHTHOUSE POINT agrees that it will not connect nor allow any connection to any portion of the wastewater system by any properties, persons, buildings or structures without prior permission of and approval of POMPANO BEACH, including compliance with all terms and conditions established by POMPANO BEACH, and any revenue or resale derived from any such connection shall belong to and be the property of POMPANO BEACH unless agreed otherwise.

ARTICLE III
MISCELLANEOUS

3.1 LIGHTHOUSE POINT presently has median strips located on Federal Highway from Sample Road north to Northeast 53rd Street. It is irrigating such median strips with non-wastewater obtained from Broward County Utilities, and the monthly water usage can be readily determined. In the future LIGHTHOUSE POINT desires to extend the area that POMPANO BEACH wastewater will be used to include Sample Road north to Northeast 53rd Street. LIGHTHOUSE POINT will give POMPANO BEACH at least sixty (60) days' notice of its desire to extend the system. Such notice will include the amount of water LIGHTHOUSE POINT is then using to irrigate the medians so that POMPANO BEACH can prepare and adjust their delivery system accordingly. All provisions of this Interlocal Agreement shall apply to the extended area referenced herein. However, POMPANO BEACH makes no warranties or assurances as to the adequacy of the volume of wastewater capable of being supplied to this or any other expanded area.

3.2 Whenever either party desires to give notice to the other, such notice shall be in writing and shall be posted in the United States mail, Return Receipt Requested, or forwarded by courier evidenced by a delivery receipt or by an overnight express delivery service addressed to the party being noticed. The address of both parties shall be as set forth below and shall remain in effect until written notice is given to the other party changing the same.

FOR THE CITY OF LIGHTHOUSE POINT:

Administrative Assistant to the Mayor
City of Lighthouse Point
City Hall
2200 Northeast 38 Street
Lighthouse Point, Florida 33064

FOR THE CITY OF POMPANO BEACH:

City Manager
City of Pompano Beach
City Hall
100 West Atlantic Boulevard
Pompano Beach, Florida 33060

3.3 Both parties agree that the invalidity of any section, clause, sentence, or provision of this Agreement shall not affect the validity of any other part of this Agreement which can be given effect without such invalid part or parts.

3.4 Both parties agree that this Agreement shall be binding upon the successors and assigns of the parties hereto and may be enforced by appropriate action in court, or courts, of competent jurisdiction.

3.5 Both parties agree that all legal requirements for execution of this Agreement have been performed and each party hereto agrees to exchange with the other certified copies of the official records of its governing body which authorize the execution of this Agreement.

3.6 LIGHTHOUSE POINT shall be responsible for implementation in its system of any federal, state, or local regulations imposed upon LIGHTHOUSE POINT, either now or in the future.

3.7 This document supersedes all prior negotiations, correspondence, conversations, agreements or understandings applicable to the matters contained herein and the parties agree that there are no commitments, agreements, or understandings concerning the subject matter of this Agreement that are not contained in this document. Accordingly, it is agreed that no deviation from the terms hereof shall be predicated upon any prior representations or agreements, whether oral or written.

It is further agreed that no modification, amendment, or alteration in the terms or conditions contained herein shall be effective unless contained in a written document executed with the same formality and of equal dignity.

3.8 In the event that POMPANO BEACH becomes or is made a party to a lawsuit either as a defendant or plaintiff, which said lawsuit arises from or is in connection with this Agreement or any of the terms hereof including, but not limited to, any action between the parties hereto and any action resulting from the effects of the improper use by LIGHTHOUSE POINT or any other of the wastewater, the wastewater system or part thereof of any liquid, or other effluent which may cause damage, LIGHTHOUSE POINT shall pay all costs and expenses paid by or incurred by POMPANO BEACH connected with or arising from such lawsuit, including a reasonable attorney's fee for the attorney representing POMPANO BEACH in such litigation, whether such costs, expenses and attorney's fee be incurred in the trial court or in any appellate court or courts to which the matter may be appealed.

3.9 The cities to this Interlocal Agreement agree to comply with all applicable Florida Statutes, rules and regulations that may now or hereafter apply to this Interlocal Agreement.

IN WITNESS WHEREOF, the parties have made and executed this Agreement on the respective dates under each signature and have caused the same to be executed by the appropriate City officials.

CITY OF LIGHTHOUSE POINT:

Witnesses:

CITY OF LIGHTHOUSE POINT

By: _____
MAYOR

By: _____
~~Admin. Assistant~~ ~~CITY MANAGER~~
to the Mayor

Attest:

CITY CLERK

(SEAL)

Approved by:

RICHARD H. ROTH
CITY ATTORNEY

STATE OF FLORIDA
COUNTY OF BROWARD

The foregoing instrument was acknowledged before me this 14th. day of March, 1997 by William F. Sullivan as Mayor of the City of Lighthouse Point, Florida, a municipal corporation, on behalf of the municipal corporation, who is personally known to me.

Rose F. FonTenault
NOTARY PUBLIC, STATE OF FLORIDA

NOTARY'S SEAL:

NOTARY PUBLIC STATE OF FLORIDA
OFFICIAL NOTARY SEAL
ROSE F FONTENAULT
COMMISSION NUMBER
CC295835
MY COMMISSION EXP
JUNE 20,1997

Rose F. FonTenault
(Name of Acknowledger Typed, Printed or Stamped)

Commission Number

STATE OF FLORIDA
COUNTY OF BROWARD

The foregoing instrument was acknowledged before me this 14th. day of March, 1997 by Gerald J. Benuart as City Manager of the City of Lighthouse Point, Florida, a municipal corporation, on behalf of the municipal corporation, who is personally known to me.

Rose F. FonTenault
NOTARY PUBLIC, STATE OF FLORIDA

NOTARY'S SEAL:

NOTARY PUBLIC STATE OF FLORIDA
OFFICIAL NOTARY SEAL
ROSE F FONTENAULT
COMMISSION NUMBER
CC295835
MY COMMISSION EXP
JUNE 20,1997

Rose F. FonTenault
(Name of Acknowledger Typed, Printed or Stamped)

Commission Number

STATE OF FLORIDA
COUNTY OF BROWARD

The foregoing instrument was acknowledged before me this 14th. day of March, 1997 by Frances S. Marsh as City Clerk of the City of Lighthouse Point, Florida, a municipal corporation, on behalf of the municipal corporation, who is personally known to me.

Rose F. FonTenault
NOTARY PUBLIC, STATE OF FLORIDA

NOTARY'S SEAL:

NOTARY PUBLIC STATE OF FLORIDA
OFFICIAL NOTARY SEAL
ROSE F FONTENAULT
COMMISSION NUMBER
CC295835
MY COMMISSION EXP
JUNE 20,1997

Rose F. FonTenault
(Name of Acknowledger Typed, Printed or Stamped)

Commission Number

CITY OF POMPANO BEACH:

Witnesses:

CITY OF POMPANO BEACH

By: _____
WILLIAM F. GRIFFIN, MAYOR

By: _____
C. WILLIAM HARGETT, JR.
CITY MANAGER

Attest:

MARY L. CHAMBERS
CITY CLERK

(SEAL)

Approved by:

GORDON B. LINN
CITY ATTORNEY

STATE OF FLORIDA

COUNTY OF BROWARD

The foregoing instrument was acknowledged before me this 1st day of May, 1997 by WILLIAM F. GRIFFIN, as Mayor of the City of Pompano Beach, Florida, a municipal corporation, on behalf of the municipal corporation, who is personally known to me.

NOTARY'S SEAL:

OFFICIAL NOTARY SEAL
ADA GRAHAM-JOHNSON
COMMISSION NUMBER
CC615706
MY COMMISSION EXPIRES
NOV. 4,1999
NOTARY PUBLIC STATE OF FLORIDA

NOTARY PUBLIC, STATE OF FLORIDA

(Name of Acknowledger Typed, Printed or Stamped)

Commission Number

STATE OF FLORIDA

COUNTY OF BROWARD

The foregoing instrument was acknowledged before me this 1st day of May, 1997 by C. WILLIAM HARGETT, JR. as City Manager of the City of Pompano Beach, Florida, a municipal corporation, on behalf of the municipal corporation, who is personally known to me.

NOTARY'S SEAL:

OFFICIAL NOTARY SEAL
ADA GRAHAM-JOHNSON
COMMISSION NUMBER
CC615705
MY COMMISSION EXPIRES
NOV. 4,1999
NOTARY PUBLIC STATE OF FLORIDA

NOTARY PUBLIC, STATE OF FLORIDA

(Name of Acknowledger Typed, Printed or Stamped)

Commission Number

STATE OF FLORIDA

COUNTY OF BROWARD

The foregoing instrument was acknowledged before me this 1st day of May, 1997 by MARY L. CHAMBERS as City Clerk of the City of Pompano Beach, Florida, a municipal corporation, on behalf of the municipal corporation, who is personally known to me.

NOTARY'S SEAL:

OFFICIAL NOTARY SEAL
ADA GRAHAM-JOHNSON
COMMISSION NUMBER
CC615705
MY COMMISSION EXPIRES
NOV. 4,1999
NOTARY PUBLIC STATE OF FLORIDA

NOTARY PUBLIC, STATE OF FLORIDA

(Name of Acknowledger Typed, Printed or Stamped)

Commission Number

GBL:amd
1/28/97
c:agr\97-1065a

RESOLUTION NO. 2007- 100

CITY OF POMPANO BEACH
Broward County, Florida

RECEIVED FEB 27 2007 CITY OF POMPANO UTILITIES

A RESOLUTION OF THE CITY COMMISSION OF THE CITY OF POMPANO BEACH, FLORIDA, APPROVING AND AUTHORIZING THE PROPER CITY OFFICIALS TO EXECUTE AN ADDENDUM TO INTERLOCAL AGREEMENT BETWEEN THE CITY OF POMPANO BEACH AND THE CITY OF LIGHTHOUSE POINT PROVIDING FOR INSPECTION OF REUSE COMPONENTS AND SIGNAGE FOR THE REUSE WATER DISTRIBUTION AND IRRIGATION SYSTEM IN THE CITY OF LIGHTHOUSE POINT BY THE CITY OF POMPANO BEACH; PROVIDING AN EFFECTIVE DATE.

BE IT RESOLVED BY THE CITY COMMISSION OF THE CITY OF POMPANO BEACH, FLORIDA:

SECTION 1. That an Agreement between the City of Pompano Beach and City of Lighthouse Point providing for inspection of reuse components and signage for the reuse water distribution and irrigation system in the City of Lighthouse Point by the City of Pompano Beach, a copy of which Agreement is attached hereto and incorporated by reference as if set forth in full, is hereby approved.

SECTION 2. That the proper City officials are hereby authorized to execute said Agreement between the City of Pompano Beach and the City of Lighthouse Point.

SECTION 3. This Resolution shall become effective upon passage.

PASSED AND ADOPTED this 23rd day of January, 2007.

JOHN C. RAYSON, MAYOR

ATTEST:

MARY L. CHAMBERS, CITY CLERK

MEBds
12/13/06
l:reso/2007-86

11/28/07
cc: Bill H.

INSTR # 106838232
OR BK 43608 Pages 652 - 660
RECORDED 02/15/07 09:20:41
BROWARD COUNTY COMMISSION
DEPUTY CLERK 1923
#3, 9 Pages

ADDENDUM
to
INTERLOCAL AGREEMENT
between
CITY OF LIGHTHOUSE POINT
and
CITY OF POMPANO BEACH
providing for
INSPECTION OF REUSE COMPONENTS AND SIGNAGE IN THE CITY OF LIGHTHOUSE POINT BY THE CITY OF POMPANO BEACH

This Addendum to the Interlocal Agreement is made and entered into between:

> **CITY OF LIGHTHOUSE POINT, FLORIDA**, a municipal corporation organized under the laws of the State of Florida, hereinafter sometime refereed to as "LIGHTHOUSE POINT",
>
> and
>
> **CITY OF POMPANO BEACH, FLORIDA**, a municipal corporation organized under the laws of the State of Florida, hereinafter sometimes referred to as "POMPANO BEACH",.

WHEREAS, LIGHTHOUSE POINT currently provides for the maintenance of a reuse water distribution and irrigation system in the center island medians between Northeast 24th Street and Northeast 54th Street; and

WHEREAS, POMPANO BEACH currently provides reuse water from its tertiary treatment facility located within the City of Pompano Beach, to LIGHTHOUSE POINT via a master meter; and

WHEREAS, The Florida Department of Environmental Protection has granted POMPANO BEACH one hundred eighty (180) days from the issuance of Permit FLA013581-

004-DWIP to provide proof of legal authority to assure the compliance of FAC Chapter 62-610 with regards to cross connection control and signage; and

WHEREAS, both cities are authorized to enter into this Addendum to the Interlocal Agreement pursuant to the provisions of Florida Statute 163.01; and

WHEREAS, both cities have determined that is mutually beneficial and in the best interests of the public to enter into this Addendum to the Interlocal Agreement;

NOW, THEREFORE, in consideration of the mutual covenants, promises, terms and conditions set forth herein, LIGHTHOUSE POINT and POMPANO BEACH do hereby agree as follows:

ARTICLE I

BACKGROUND PURPOSE AND INTENT

1.1 The above recitals are true and correct and are incorporated herein as if set forth in full hereunder.

1.2 POMPANO BEACH currently provides reuse water from their tertiary treatment facility for use by LIGHTHOUSE POINT in irrigating the median strips located within LIGHTHOUSE POINT and in the center of Federal Highway, by and through an Interlocal Agreement providing for effluent water, dated May 1, 1997.

1.3 POMPANO BEACH shall provide annual inspection of signage in the City of Lighthouse Point, as required by FAC 62-610.

1.4 LIGHTHOUSE POINT will allow POMPANO BEACH access to median locations for the purpose of cross connection and signage inspection.

1.5 LIGHTHOUSE POINT will reimburse POMPANO BEACH for all costs incurred for inspections.

1.6 It is the purpose of this Addendum to accomplish the above purposes and establish the responsibilities and obligations of each of the cities with respect to this Addendum.

ARTICLE II

TERMS OF AGREEMENT

2.1 This Addendum to the Interlocal Agreement shall commence upon the last date that both parties have executed the same by their appropriate City officials and have filed the Agreement with the Clerk of the Circuit Court for Broward County, Florida, as required by Florida Statute Section 163.01(11). This Agreement shall continue for the remainder of the period of the current Interlocal Agreement between Pompano Beach and Lighthouse Point providing for effluent water use, dated May 1, 1997, and approved by Resolution No. 97-116. The time periods for both the Agreement and this Addendum to the Agreement shall merge, and renewal or modification of the time period of the Agreement shall cause the time periods for this Addendum to run concurrently.

2.2 Any successive renewal period shall be under the same terms and conditions as provided for in the original Interlocal Agreement unless both parties have executed an amendment changing the terms or conditions contained herein, and the original Agreement as thus amended by this Addendum shall be in force in all future renewal successive periods.

2.3 POMPANO BEACH agrees to conduct annual inspection of the medians and check valve boxes for signage requirements according to FAC 62-610. Inspections will be documented. The cost and expense of such inspections shall be borne by LIGHTHOUSE POINT.

2.4 POMPANO BEACH agrees to conduct annual inspection of all cross connection control devices in the medians where reuse water is used and where cross connections are required. The cost and expense of such inspections shall be borne by LIGHTHOUSE POINT. Inspections shall meet City of Pompano Beach Ordinance requirements, including, but not limited to, annual backflow certification by a licensed inspector.

2.5 LIGHTHOUSE POINT agrees to allow POMPANO BEACH access to inspection locations in public medians where reuse is applied.

2.6 LIGHTHOUSE POINT agrees to install approved cross connection control devices in any reuse irrigation area where potable water is also available.

2.7 LIGHTHOUSE POINT agrees to provide a map to POMPANO BEACH showing the locations of all valve boxes, and to provide revisions upon receiving approval for additional connections.

2.8 LIGHTHOUSE POINT agrees to provide to POMPANO BEACH Engineered sealed plans for additional reuse areas, for approval, before connecting to the reuse system.

2.9 LIGHTHOUSE POINT agrees to pay POMPANO BEACH the amount of Eight Hundred Dollars ($800.00) at the commencement of each five (5) year renewal period of the Agreement which represents its share of the costs of permit renewal with the Florida Department of Environmental Protection and with Broward County, incurred by POMPANO BEACH.

ARTICLE III

MISCELLANEOUS

3.1 LIGHTHOUSE POINT presently irrigates median strips located between Northeast 24th Street and Northeast 54th Street. LIGHTHOUSE POINT will abide by regulations for use of reuse water as specified in the Florida Department of Environmental Protection Permit FLA103581-004-DW1P, issued to POMPANO BEACH on April 26, 2005. LIGHTHOUSE POINT will agree to abide by the FAC Chapter 62-610 and the City of Pompano Beach Ordinance Chapter 54.

3.2 Both parties agree that the invalidity of any section, clause, sentence or provision of this Addendum to the Interlocal Agreement shall not affect the validity of any other part of this Addendum which can be given effect without such invalid part or parts.

3.3. Both parties agree that this Addendum shall be binding upon the successors and assigns of the parties hereto and may be enforced by appropriate action in court, or courts, of competent jurisdiction.

3.4. Both parties agree that all legal requirements for execution of this Addendum have been performed and each party hereto agrees to exchange with the other certified copies of the official records of its governing body which authorize the execution of this Addendum.

3.5. LIGHTHOUSE POINT shall be responsible for implementation in its system of any Federal, state, or local regulations imposed upon LIGHTHOUSE POINT, either now or in the future.

3.6. This document amends the Interlocal Agreement Providing for Effluent Water Use between the City of Pompano Beach and the City of Lighthouse Point, dated May 1, 1997. Accordingly, it is agreed that no deviation from the terms hereof shall be predicated upon any prior representations or agreements, whether oral or written.

It is further agreed that no modification, amendment, or alteration in the terms or conditions contained herein shall be effective unless contained in a written document executed with the same formality and of equal dignity.

3.7. LIGHTHOUSE POINT agrees, to the extent permitted by law, to indemnify, save and hold harmless POMPANO BEACH and any of its officials, commissioners, officers, agents and employees from any and all claims of loss, injury, death, damage and liabilities of whatever kind or nature including attorney's fees, court costs and interest, and any costs of defense from any persons, or their personal representatives, estate, heirs, next-of-kin, or any other party that may claim or have acquired an interest, occasioned wholly, or in part, by the conduct, action, activities, or negligence of LIGHTHOUSE POINT, its agents or employees, involving or arising from, the use or distribution of

reuse water by LIGHTHOUSE POINT, including any and all claims arising from the operation of its reuse water distribution and irrigation system, whether such costs, expenses and attorney's fees be incurred in the trial court or in any appellate court or courts to which the matter may be appealed.

3.8. The cities to this Addendum to the Interlocal Agreement to comply with all applicable Florida Statutes, rules and regulations that may now or hereafter apply to this Addendum.

IN WITNESS WHEREOF, the parties hereto have set their hands and affixed their corporate seals the day and year first above written.

"LIGHTHOUSE POINT":

Witnesses:

Signature

Signature

CITY OF LIGHTHOUSE POINT

By: _____ MAYOR

By: _____ CITY MANAGER

(SEAL)

Attest:

CITY CLERK

Approved by:

CITY ATTORNEY

STATE OF FLORIDA
COUNTY OF BROWARD

The foregoing instrument was acknowledged before me this 18th day of December, 2007 by Fred Scherr, as Mayor of the City of Lighthouse Point, Florida, a municipal corporation, on behalf of the municipal corporation, who is personally known to me.

Elizabeth Lepore
NOTARY PUBLIC, STATE OF FLORIDA

NOTARY'S SEAL:

ELIZABETH LEPORE
MY COMMISSION # DD 346194
EXPIRES: September 25, 2008
Bonded Thru Notary Public Underwriters

ELIZABETH LEPORE
(Name of Acknowledger Typed, Printed or Stamped)

Commission Number

STATE OF FLORIDA
COUNTY OF BROWARD

The foregoing instrument was acknowledged before me this 18th day of December, 2007 by John D. Pernsky as City Manager of the City of Lighthouse Point, Florida, a municipal corporation, on behalf of the municipal corporation, who is personally known to me.

Elizabeth Lepore
NOTARY PUBLIC, STATE OF FLORIDA

NOTARY'S SEAL:

ELIZABETH LEPORE
MY COMMISSION # DD 346194
EXPIRES: September 25, 2008
Bonded Thru Notary Public Underwriters

ELIZABETH LEPORE
(Name of Acknowledger Typed, Printed or Stamped)

Commission Number

STATE OF FLORIDA
COUNTY OF BROWARD

The foregoing instrument was acknowledged before me this 18th day of December, 2007 by Carol Jordan as City Clerk of the City of Lighthouse Point, Florida, a municipal corporation, on behalf of the municipal corporation, who is personally known to me.

Elizabeth Lepore
NOTARY PUBLIC, STATE OF FLORIDA

NOTARY'S SEAL:

ELIZABETH LEPORE
MY COMMISSION # DD 346194
EXPIRES: September 25, 2008
Bonded Thru Notary Public Underwriters

ELIZABETH LEPORE
(Name of Acknowledger Typed, Printed or Stamped)

Commission Number

"POMPANO BEACH":

Witnesses:

Signature

Signature

CITY OF POMPANO BEACH

By: _____
JOHN C. RAYSON, MAYOR

By: _____
C. WILLIAM HARGETT, JR.,
CITY MANAGER

Attest:

MARY L. CHAMBERS, CITY CLERK

(SEAL)

Approved As To Form:

GORDON B. LINN, CITY ATTORNEY

STATE OF FLORIDA
COUNTY OF BROWARD

The foregoing instrument was acknowledged before me this 26th day of January, 2007 by **JOHN C. RAYSON**, as Mayor of the City of Pompano Beach, Florida, a municipal corporation, on behalf of the municipal corporation, who is personally known to me.

NOTARY'S SEAL:

ASCELETA HAMMOND
MY COMMISSION # DD621095
EXPIRES: January 07, 2011
1-800-3-NOTARY
Fl. Notary Discount Assoc. Co.

NOTARY PUBLIC, STATE OF FLORIDA

Asceleta Hammond
(Name of Acknowledger Typed, Printed or Stamped)

Commission Number

STATE OF FLORIDA
COUNTY OF BROWARD

The foregoing instrument was acknowledged before me this 26th day of January, 2007 by **C. WILLIAM HARGETT, JR.,** as City Manager of the City of Pompano Beach, Florida, a municipal corporation, on behalf of the municipal corporation, who is personally known to me.

NOTARY'S SEAL:

ASCELETA HAMMOND
MY COMMISSION # DD621095
EXPIRES: January 07, 2011
1-800-3-NOTARY Fl. Notary Discount Assoc. Co.

NOTARY PUBLIC, STATE OF FLORIDA

Asceleta Hammond
(Name of Acknowledger Typed, Printed or Stamped)

Commission Number

STATE OF FLORIDA
COUNTY OF BROWARD

The foregoing instrument was acknowledged before me this 26th day of January, 2007 by **MARY L. CHAMBERS** as City Clerk of the City of Pompano Beach, Florida, a municipal corporation, on behalf of the municipal corporation, who is personally known to me.

NOTARY'S SEAL:

ASCELETA HAMMOND
MY COMMISSION # DD621095
EXPIRES: January 07, 2011
1-800-3-NOTARY Fl. Notary Discount Assoc. Co.

NOTARY PUBLIC, STATE OF FLORIDA

Asceleta Hammond
(Name of Acknowledger Typed, Printed or Stamped)

Commission Number

MEB/ds
12/6/06
L:agr/utility/2007-326

APPENDIX E

REUSE AGEREEMENT BETWEEN THE CITY OF POMPANO BEACH AND BROWARD COUNTY

Orig. 5

RESOLUTION NO. 2016- 229

CITY OF POMPANO BEACH
Broward County, Florida

A RESOLUTION OF THE CITY COMMISSION OF THE CITY OF POMPANO BEACH, FLORIDA, APPROVING AND AUTHORIZING THE PROPER CITY OFFICIALS TO EXECUTE A RECLAIMED WATER SUPPLY AGREEMENT BETWEEN BROWARD COUNTY AND THE CITY OF POMPANO BEACH TO FURNISH RECLAIMED WATER TO BROWARD COUNTY'S UTILITY SERVICE AREA, WITHIN THE POMPANO BEACH NORTHERN COMMUNITIES; PROVIDING AN EFFECTIVE DATE.

BE IT RESOLVED BY THE CITY COMMISSION OF THE CITY OF POMPANO BEACH, FLORIDA:

SECTION 1: That an Agreement between Broward County and the City of Pompano Beach, a copy of which Agreement is attached hereto and incorporated by reference as if set forth in full, is hereby approved.

SECTION 2: That the proper City officials are hereby authorized to execute said Agreement between Broward County and the City of Pompano Beach.

SECTION 3: This Resolution shall become effective upon passage.

PASSED AND ADOPTED this 28th day of June, 2016.

LAMAR FISHER, MAYOR

ATTEST:

ASCELETA HAMMOND, CITY CLERK

CS/ds
6/3/16
l:reso/2016-226

PLEASE RETURN TO:
Asceleta Hammond, CMC
City Clerk
P.O. Drawer 1300, Suite 253
Pompano Beach, FL 33061

Org. 5

RECLAIMED WATER SUPPLY AGREEMENT

BETWEEN

BROWARD COUNTY

AND

CITY OF POMPANO BEACH

RECLAIMED WATER SUPPLY AGREEMENT

BETWEEN

BROWARD COUNTY

AND

CITY OF POMPANO BEACH

This is an Agreement, made and entered into by and between: BROWARD COUNTY, a political subdivision of the State of Florida, hereinafter referred to as "COUNTY," through its Board of County Commissioners,

AND

CITY OF POMPANO BEACH, a municipal corporation located in Broward County, Florida, and organized and existing under the laws of the State of Florida, hereinafter referred to as "CITY," collectively referred to as the "Parties."

WHEREAS, CITY owns and operates the Reclaimed Water System; and

WHEREAS, the Reclaimed Water System produces Reclaimed Water for beneficial reuse; and

WHEREAS, the CITY desires to furnish Reclaimed Water to COUNTY; and

WHEREAS, COUNTY desires to purchase Reclaimed Water from the CITY to provide a source for non-potable water within COUNTY's Service Area; and

WHEREAS, CITY has Reclaimed Water capacity sufficient to meet the needs of COUNTY; NOW, THEREFORE,

IN CONSIDERATION of the mutual terms, conditions, promises, covenants, and payments hereinafter set forth, CITY and COUNTY agree to the following:

1. PREAMBLE. In order to establish the background, context, and frame of reference for this Agreement and to generally express the objectives and intentions of the Parties herein, the following statements, representations, and explanations shall be accepted as predicates of the undertakings and commitments included within the provisions which follow and may be relied upon by the Parties as essential elements of the mutual considerations upon which this Agreement is based:

1.1 COUNTY owns and operates COUNTY System.

1.2 CITY owns and operates the Reclaimed Water System capable of serving certain defined Reclaimed Water needs of COUNTY.

1.3 COUNTY agrees to purchase Reclaimed Water from CITY in accordance with the terms set forth in this Agreement.

2. DEFINITIONS. Unless the context specifically indicates otherwise, the following words and phrases used in this Agreement shall have the following meanings:

2.1 **Agreement** – This Agreement includes Articles 1 through 7, the exhibits and documents that are expressly incorporated by reference.

2.2 **Board** – The Board of County Commissioners of Broward County, Florida.

2.3 **County Administrator** – The administrative head of COUNTY appointed by the Board.

2.4 **County Attorney** – The chief legal counsel for COUNTY appointed by the Board.

2.5 **COUNTY Reuse System Permits** – All permits, licenses or other governmental approvals necessary for acquisition, construction, operation and expansion of COUNTY Reuse System, including but not limited to, the Florida Department of Environmental Protection (FDEP) Permit No. FL0031771.

2.6 **COUNTY Service Area** – The geographic boundaries for which CITY's Reclaimed Water is ultimately utilized by COUNTY, as shown on Exhibit "A," attached hereto and incorporated herein.

2.7 **COUNTY Reuse System** – Those facilities owned or operated, or both, by COUNTY including present and future Reclaimed Water distribution and utilization system, which may include Reclaimed Water mains, pumping stations, storage facilities, and appurtenances thereto downstream of the Point of Connection to the Reclaimed Water System.

2.8 **Effective Date** – The date on which the Agreement is approved and fully executed by the Parties.

2.9 **Joint Operation and Maintenance Costs** – The portion of total Operation and Maintenance Costs which provide a benefit to both retail and wholesale Reclaimed Water customers of the CITY.

2.10 **Metering Facilities** – Those certain Reclaimed Water meters and appurtenant recording and transmitting devices to be installed and owned by the CITY, as required in Article 3, which are used to measure the volume of Reclaimed Water delivered to COUNTY.

2.11 **Point of Connection** – The point or points where COUNTY System connects to CITY System for the purpose of delivering Reclaimed Water to COUNTY System from the CITY System.

2.12 **Operation and Maintenance Costs** – These costs shall include any and

all costs incurred by the CITY in operating, maintaining and administering the Reclaimed Water System, including, but not limited to, the general administrative and legal costs of the CITY related to operation, maintenance, management, security and development of the Reclaimed Water System; costs associated with tools, equipment, vehicles, supplies, materials, services and support for the operation, maintenance, management, security and development of the Reclaimed Water System; any costs of litigation or legal judgment against the CITY relating to operation, maintenance, management, security and development of the Reclaimed Water System; development expenses relating to expansion of the Reclaimed Water System; all costs incurred in planning or applying for, obtaining, maintaining and defending the Reclaimed Water System Permit; accounting, legal and engineering expenses; ordinary and current rentals of equipment or other property; refunds of moneys lawfully due to others; payments in lieu of taxes and facility impact fees; moneys to be deposited to a rate stabilization fund; and fees for management of the Reclaimed Water System or any portion thereof.

2.13 **Rate Year** – The time period that each annual rate adjustment will be in effect, beginning March 1st of each year and ending February 28/29th of each year.

2.14 **Reclaimed Water** – Domestic wastewater effluent that has received at least secondary treatment and high level disinfection and which is suitable for direct, non-potable, beneficial reuse in accordance with Florida Department of Environmental Protection (FDEP) regulations.

2.15 **Reclaimed Water Ordinance** – Chapter 54 of the CITY Code, Ordinance titled "Reuse Water and Cross-Connection Control," as may be amended from time to time.

2.16 **Reclaimed Water System or CITY System** – Those facilities owned or operated, or both, by CITY, including present and future Reclaimed Water treatment and transmission facilities, up to the Point of Connection that are now or will be used for the purpose of providing Reclaimed Water from the CITY System to the COUNTY System.

2.17 **Reclaimed Water System Permits** – All permits, licenses or other government approvals necessary for the acquisition, construction, operation and expansion of the Reclaimed Water System, including but not limited to, FDEP Permit No. FL013581.

2.18 **Reserve Capacity** – The average monthly maximum daily flow expressed in one million gallons per day (MGD) for which COUNTY has reserved Reclaimed Water as set forth in Section 3.7.

2.19 **Retail Operation and Maintenance Costs** – The portion of total Operation and Maintenance Costs which only provide a benefit to retail

Reclaimed Water customers of the CITY.

3. CONNECTING TO CITY RECLAIMED WATER SYSTEM; REUSE; CAPACITY.

3.1 POINT OF CONNECTION AND METERING FACILITIES. The Point of Connection and Metering Facilities shall be as identified in Exhibit "B," attached hereto and incorporated herein.

3.2 MAINTENANCE OF COUNTY SYSTEM. COUNTY shall design, construct, permit, operate, and properly maintain, at its sole cost and expense, COUNTY System that is necessary to properly receive and distribute Reclaimed Water and shall obtain and maintain all required COUNTY Reuse System Permits.

3.3 COUNTY SERVICE AREA. COUNTY agrees that it will not distribute Reclaimed Water outside COUNTY Service Area (as shown in Exhibit A).

3.4 REUSE OF RECLAIMED WATER. COUNTY shall not reuse or permit reuse by a third party of Reclaimed Water without requiring as a condition of such use compliance with the Reclaimed Water Ordinance by COUNTY or such third party. COUNTY shall meet all requirements for public health and reuse of Reclaimed Water as described in Chapter 62-610, Florida Administrative Code (F.A.C.), and be responsible to ensure that third party users meet these same requirements. COUNTY shall be solely responsible for any Reclaimed Water sampling, inspection and testing required by any federal, state or local regulatory agency for Reclaimed Water downstream of the Point of Connection.

3.5 EXCLUSIVITY. COUNTY shall purchase all of its Reclaimed Water exclusively from CITY to meet all of COUNTY's Reclaimed Water needs within COUNTY Service Area and use the Reclaimed Water within COUNTY Service Area (as shown in Exhibit A). COUNTY Service Area may be changed administratively without formal modification to this Agreement, by mutual consent as documented by a letter jointly signed by the persons designated in Section 7.5 of this Agreement.

3.6 RESERVE CAPACITY. CITY's obligation to furnish Reclaimed Water services to COUNTY under this Agreement shall be limited to an average rate of one million gallons per day. CITY shall have all right and power by suit or other such proceedings at law or in equity to enforce the limitation of its obligations hereunder and to prohibit COUNTY or its agents or employees from demanding Reclaimed Water which exceeds the amount of Reserve Capacity. If COUNTY exceeds the reserve capacity for four (4) consecutive months, CITY shall have the right to terminate this Agreement for cause pursuant to Article 6 and/or require renegotiation of the Agreement. The above Reserve Capacity may be changed administratively without formal modification to this Agreement, by mutual consent as documented by a letter jointly signed by the persons

designated in Section 7.5 of this Agreement.

3.7 MINIMUM DELIVERY PRESSURE. CITY does not guarantee, but intends and will endeavor to provide a minimum delivery pressure at the Point of Connection of fifty (50) pounds per square-inch as measured at the Metering Facilities. It is anticipated that COUNTY may need to boost pressure for delivery to third parties within COUNTY Service Area.

3.8 COUNTY TO INSTALL METERS AND ANCILLARY EQUIPMENT. COUNTY shall transfer to CITY the ownership of the Metering Facilities and modulating flow control valves capable of isolating flow to COUNTY, together with the housing, accessories, and ancillary equipment thereto, and record drawings acceptable to CITY. COUNTY may install its own Reclaimed Water meters and appurtenant recording and transmitting devices at the Point(s) of Connection. However, the quantity of Reclaimed Water delivered from CITY's Reuse Plant at the specified Point of Connection shall be exclusively measured by the Metering Facilities. In the event the capacity of the Metering Facilities or modulating flow control valve becomes inadequate for the amount of flow delivered because of increased demand by COUNTY, CITY, at COUNTY's sole expense, shall replace the device or install such additional device or devices as may be necessary and invoice COUNTY for the costs of doing so. COUNTY shall remit to CITY the amount invoiced within thirty (30) days of COUNTY's receipt of the invoice.

3.9 CITY TO MAINTAIN METERS. CITY shall maintain the Metering Facilities, routinely inspect the metering devices at least every three (3) months, calibrate twice a year, and have an annual inspection and report prepared regarding the condition and accuracy of the Metering Facilities. A copy of the inspection report shall be furnished to COUNTY electronically within five (5) days of completion. COUNTY shall have the right to make its own interim meter inspection at any time during normal business hours provided, however, no such inspection shall be made unless COUNTY shall first provide CITY with written notice of its intent to have the inspection made, nor shall such inspection be made prior to forty-eight (48) hours, excluding Saturdays, Sundays, and holidays, subsequent to the receipt of said notice by CITY. All costs and expenses of COUNTY's interim inspection shall be borne by COUNTY, unless the Metering Facilities are found to be inaccurate beyond the manufacturer's guaranteed range of accuracy and beyond the adjusted range of accuracy due to the design and installation at the specific location, in which case the reasonable cost and expense of such interim inspection shall be borne by CITY.

3.10 PAYMENT IN CASE OF METER INACCURACY. Should the Metering Facilities be found to be inaccurate beyond the manufacturer's range of accuracy and beyond the adjusted range of accuracy due to the design and installation at the specific location, the Metering Facilities will be assumed to be inaccurate since the last semi-annual meter calibration and the following month's billing will be adjusted to show a credit or additional charge to COUNTY for that period,

based on the previous six-month average that the Metering Facilities were found to be accurate by CITY.

3.11 PAYMENT IN CASE OF METER FAILURE. If at any time the Metering Facilities becomes inoperative or in any way fails to provide information with respect to the quantity of Reclaimed Water flow, COUNTY shall pay to CITY a daily amount equal to the average flow of the monthly billing period prior to the date the Metering Facilities became inoperative.

4. SUPPLY OF RECLAIMED WATER.

4.1 RECLAIMED WATER SUPPLY. CITY does not guarantee the supply of the Reclaimed Water supplied at the Point of Connection. Cessation or restriction of Reclaimed Water supply services, including any resulting from, but not limited to, an act of God; fire; strikes; accidents; casualty; maintenance; expansion; breakdown or damage to machinery, pumps, pipelines, or storage, processing, treatment or other facilities insurrection or riot; government rules, acts orders, restrictions, regulations or requirements; discretionary acts or actions of any government, public, governmental authority, commission, board, agency, agent, official or officer (except for actions or of the Parties or its employees, agents or officers affecting this Agreement); the enactment of any statute, ordinance resolution, regulation, rule, ruling or order; a decree, judgment or injunction of any court; civil or military authority shall not constitute a breach of this Agreement by CITY. CITY shall exercise its regular management practices with respect to providing Reclaimed Water of a supply and quality to meet COUNTY's needs up to the limit of Reserved Capacity.

4.2 UNAVAILABLE RECLAIMED WATER SUPPLY. CITY agrees to attempt, when possible, to give COUNTY notice by telephone, followed by notice in writing via email, in the event the supply of Reclaimed Water has become or will be unavailable.

4.3 RECLAIMED WATER SAMPLING. CITY shall be responsible for having the Reclaimed Water within the Reclaimed Water System sampled and tested as required by the Reclaimed Water System Permits. Any Reclaimed Water sampling, inspection and testing required by any regulatory agency for Reclaimed Water downstream of the Point of Connection shall be the sole responsibility of COUNTY.

5 PROVISIONS PERTAINING TO CHARGES.

5.1 BASIS OF CHARGES. CITY shall provide Reclaimed Water to COUNTY at the following initial Wholesale Reclaimed Water Rate:

Volumetric rate of $_0.76_ per thousand gallons

The Wholesale Reclaimed Water Rate is subject to change each Rate Year, based on actual costs incurred during the previous Fiscal Year. COUNTY shall be notified of proposed rate changes in writing at least sixty (60) days prior to the

beginning of each Rate Year. No increase shall be implemented without this required notice.

5.2 ESTABLISHMENT OF WHOLESALE RECLAIMED WATER RATE. The Wholesale Reclaimed Water Rate is designed to allow the CITY to pay all Operation and Maintenance Cost of the Reclaimed Water System, both fixed and variable, as may be determined by the CITY based on the cost allocation methodology demonstrated in Exhibit C, as needed to supply Reclaimed Water to wholesale customers. For each Rate Year, the CITY shall fix a Wholesale Reclaimed Water Rate for the sale of Reclaimed Water furnished by the CITY to the COUNTY, as follows:

(1) Assessment of Joint Operation and Maintenance Cost to COUNTY. For each Rate Year, the Wholesale Reclaimed Water Rate will be based on the actual Operation and Maintenance Cost incurred in the prior Fiscal Year. The CITY shall separate the actual Operation and Maintenance Cost from the prior Fiscal Year into Joint Operation and Maintenance Cost and Retail Operation and Maintenance Cost. The City will develop estimates of the actual costs incurred in each Fiscal Year in order to prepare a new rate calculation before the end of January in order to provide notification of any changes to the Wholesale Reclaimed Water Rate at least thirty (30) days prior to the beginning of each Rate Year. The Joint Operation and Maintenance Cost shall be allocated to the COUNTY based on its expected purchase of Reclaimed Water pursuant to Section 5.2 (2) in proportion to the total expected Reclaimed Water demand for said Rate Year and expressed as cost per thousand gallons of Reclaimed Water (the Wholesale Reclaimed Water Rate).

(2) The COUNTY will provide to the CITY an estimate of expected purchases of Reclaimed Water for each Rate Year by the end of December of the preceding year. This estimate shall be used or the previous year's contracted amount (whichever is larger), in combination with the CITY's estimate of retail reclaimed water sales for the next Rate Year, to determine the total expected reclaimed water demand.

(3) Exclusivity. The Wholesale Reclaimed Water Rate shall not be subject to supervision or regulation by any other commission, board, bureau, agency or other political subdivision or agency of the county, state or federal government.

5.3 PAYMENT AND PENALTIES FOR NON-PAYMENT. CITY shall bill COUNTY for Reclaimed Water services on a monthly basis in accordance with its standard billing procedures and COUNTY shall pay such billings within forty-five (45) days of the date of the receipt of each monthly bill. Should COUNTY not pay within the forty-five (45) day period, COUNTY shall pay an interest penalty on the unpaid balance at the maximum rate allowable by law. Should a billing or a portion of a billing be outstanding for a period of more than sixty (60) days from the date of the original billing, COUNTY shall be considered in default

and CITY shall have the right, but not the obligation, to: (a) discontinue service until the past due billing is paid; (b) seek enforcement for the payment of outstanding billings by filing an action in the state court of local jurisdiction; and (c) terminate this Agreement for cause pursuant to Article 6.

6. TERM AND TERMINATION AND OTHER AGENCIES

6.1 The Parties acknowledge that each is undertaking a major obligation in consideration for entering into this Agreement. The term of this Agreement shall begin on the Effective Date, and shall continue in perpetuity unless terminated:

- for cause as provided in Sections 6.2 through 6.4 below,
- by mutual agreement of the parties,
- upon three (3) years written notice by CITY to COUNTY or by COUNTY to CITY or
- pursuant to Section 7.6.

6.2 This Agreement may be terminated for cause by the aggrieved Party if the Party in breach has not corrected the breach within thirty (30) days after written notice from the aggrieved Party identifying the breach.

6.3 Termination of this Agreement for cause shall include, but not be limited to, COUNTY exceeding the reserve capacity for four (4) consecutive months pursuant to Section 3.7, COUNTY's failure to timely pay any billings from CITY for the services provided pursuant to this Agreement pursuant to Section 5.2, or failure to comply with the terms set forth in this Agreement.

6.4 JURISDICTION OF OTHER AGENCIES. The Parties acknowledge that certain federal, state, and local agencies have jurisdiction and control over Reclaimed Water matters. Should any such agency issue legally enforceable laws, regulations, mandates, or orders that may alter any of the terms and conditions of this Agreement, each Party shall not be liable to the other Party because of such action, provided that CITY shall not be precluded from making all necessary adjustments to the rates, fees, and charges defined in Article 5. If such agency requests a change in the terms and conditions of this Agreement, the Parties will, by mutual agreement, make every effort to comply with such request. However, this section shall not preclude either Party from bringing forth administrative or judicial challenge, or both, to any change requested by any agency.

7. MISCELLANEOUS

7.1 GRANT INFORMATION. The Parties shall provide each other with all reasonably necessary information pertinent to COUNTY System and COUNTY Service Area or CITY System which any federal, state, or local agencies shall require in an application for financial assistance for construction of Reclaimed Water facilities.

7.2 DEFAULT. In the event any Party defaults under any terms or provisions of this Agreement, the Parties may avail themselves of any rights or remedies available under applicable law, except that the Agreement may not be terminated, except as specified in Article 6.

7.3 INDEPENDENT CONTRACTOR. COUNTY is an independent contractor under this Agreement. Services provided by COUNTY pursuant to this Agreement shall be subject to the supervision of COUNTY. In providing such services, neither COUNTY nor its agents shall act as officers, employees, or agents of CITY. No partnership, joint venture, or other joint relationship is created hereby. CITY does not extend to COUNTY or COUNTY's agents any authority of any kind to bind CITY in any respect whatsoever.

7.4 THIRD PARTY BENEFICIARIES. Neither COUNTY nor CITY intends to directly or substantially benefit a third party by this Agreement. Therefore, the Parties acknowledge that there are no third party beneficiaries to this Agreement and that no third party shall be entitled to assert a right or claim against either of them based upon this Agreement.

7.5 NOTICES. Whenever either Party desires to give notice to the other, such notice must be in writing, sent by certified United States Mail, postage prepaid, return receipt requested, or sent by commercial express carrier with acknowledgement of delivery, or by hand delivery with a request for a written receipt of acknowledgment of delivery, addressed to the Party for whom it is intended at the place last specified. The place for giving notice shall remain the same as set forth herein until changed in writing in the manner provided in this section. For the present, the Parties designate the following:

FOR COUNTY:

Director, Broward County Water & Wastewater Services
2555 West Copans Road
Pompano Beach, Florida 33069

With copies to:

County Administrator
115 S. Andrews Ave., Room 409,
Fort Lauderdale, FL 33301-1872

County Attorney
115 S. Andrews Ave., Room 423,
Fort Lauderdale, FL 33301-1872

FOR CITY:

Director of Utilities

City of Pompano Beach Utilities Department
1205 NE 5th Avenue
Pompano Beach, FL 33060

With Copies to:
City Manager
1205 NE 5th Ave
Pompano Beach, FL 33060

City Attorney
1205 NE 5th Ave
Pompano Beach, FL 33060

7.6 ASSIGNMENT.

Neither this Agreement nor any right or interest herein shall be assigned, transferred, or encumbered without the written consent of the other Party. Notwithstanding the Termination provision of this Agreement, CITY may terminate this Agreement, effective immediately, if there is any assignment, or attempted assignment, transfer, or encumbrance, by COUNTY of this Agreement or any right or interest herein without CITY's written consent.

7.7 GOVERNMENTAL IMMUNITY. Nothing herein is intended to serve as a waiver of sovereign immunity by any Party nor shall anything included herein be construed as consent to be sued by third parties in any matter arising out of this Agreement or any other contract. COUNTY is an entity subject to Section 768.28, Florida Statutes, and shall be fully responsible for the acts and omissions of its agents or employees to the extent permitted by law.

7.8 MATERIALITY AND WAIVER OF BREACH. Each requirement, duty, and obligation set forth herein was bargained for at arm's-length and is agreed to by the Parties. Each requirement, duty, and obligation set forth herein is substantial and important to the formation of this Agreement, and each is, therefore, a material term hereof.

CITY's or COUNTY's failure to enforce any provision of this Agreement shall not be deemed a waiver of such provision or modification of this Agreement. A waiver of any breach of a provision of this Agreement shall not be deemed a waiver of any subsequent breach and shall not be construed to be a modification of the terms of this Agreement.

7.9 COMPLIANCE WITH LAWS. CITY and COUNTY shall comply with all applicable federal, state, and local laws, codes, ordinances, rules, and regulations in performing its duties, responsibilities, and obligations pursuant to this Agreement.

7.10 SEVERANCE. In the event a portion of this Agreement is found by a court of competent jurisdiction to be invalid, the remaining provisions shall continue to

be effective unless CITY or COUNTY elects to terminate this Agreement pursuant to article 6.

7.11 JOINT PREPARATION. The Parties and their counsel have participated fully in the drafting of this Agreement and acknowledge that the preparation of this Agreement has been their joint effort. The language agreed to expresses their mutual intent and the resulting document shall not, solely as a matter of judicial construction, be construed more severely against one of the Parties than the other. The language in this Agreement shall be interpreted as to its fair meaning and not strictly for or against any Party.

7.12 PRIORITY OF PROVISIONS. If there is a conflict or inconsistency between any term, statement, requirement, or provision of any exhibit attached hereto, any document or events referred to herein, or any document incorporated into this Agreement by reference and a term, statement, requirement, or provision of Articles 1 through 7 of this Agreement, the term, statement, requirement, or provision contained in Articles 1 through 7 shall prevail and be given effect.

7.13 JURISDICTION, VENUE, WAIVER OF JURY TRIAL. This Agreement shall be interpreted and construed in accordance with and governed by the laws of the State of Florida. The Parties acknowledge that jurisdiction of any controversies or legal disputes arising out of this Agreement and any action involving the enforcement or interpretation of any rights hereunder, shall be exclusively in the state courts of the Seventeenth Judicial Circuit in Broward County, Florida, and venue for litigation arising out of this Agreement shall be exclusively in such state courts, forsaking any other jurisdiction which either Party may claim by virtue of its residency or other jurisdictional device. **BY ENTERING INTO THIS AGREEMENT, COUNTY AND CITY HEREBY EXPRESSLY WAIVE ANY RIGHTS EITHER PARTY MAY HAVE TO A TRIAL BY JURY OF ANY CIVIL LITIGATION RELATED TO, ARISING FROM, OR IN CONNECTION WITH THIS AGREEMENT.**

7.14 AMENDMENTS. No modification, amendment, or alteration in the terms or conditions contained herein shall be effective unless contained in a written document prepared with the same or similar formality as this Agreement and executed by CITY and COUNTY, or others delegated authority to or otherwise authorized to execute same on their behalf.

7.15 PRIOR AGREEMENTS. This document represents the final and complete understanding of the Parties and incorporates or supersedes all prior negotiations, correspondence, conversations, agreements, and understandings applicable to the matters contained herein. There is no commitment, agreement, or understanding concerning the subject matter of this Agreement that is not contained in this written document. Accordingly, no deviation from the terms hereof shall be predicated upon any prior representation or agreement, whether oral or written.

7.16 INCORPORATION BY REFERENCE. The truth and accuracy of each "Whereas" clause set forth above is acknowledged by the Parties. The attached Exhibits "A" and "B" are incorporated into and made part of this Agreement.

7.17 REPRESENTATION OF AUTHORITY. Each individual executing this Agreement on behalf of a Party hereto hereby represents and warrants that he or she is, on the date he or she signs this Agreement, duly authorized by all necessary and appropriate action to execute this Agreement on behalf of such Party and does so with full legal authority.

7.18 MULTIPLE ORIGINALS. Multiple copies of this Agreement may be executed by all Parties, each of which, bearing original signatures, shall have the force and effect of an original document.

IN WITNESS WHEREOF, the Parties have made and executed this Agreement: BROWARD COUNTY, through its BOARD OF COUNTY COMMISSIONERS, signing by and through its Mayor or Vice-Mayor, authorized to execute same by Board action on the 16th day of August, 2016, and CITY OF POMPANO BEACH, signing by and through its Mayor, duly authorized to execute same.

COUNTY

ATTEST:

Broward County Administrator, as
Ex-Officio Clerk of the Broward County
Board of County Commissioners

BROWARD COUNTY, by and through
its Board of County Commissioners

By _____
Mayor

16th day of August, 2016

Approved as to form by
Joni Armstrong Coffey
Broward County Attorney
Governmental Center, Suite 423
115 South Andrews Avenue
Fort Lauderdale, Florida 33301
Telephone: (954) 357-7600
Telecopier: (954) 357-7641

By _____ 8/9/16
Michael J. Kerr
Deputy County Attorney

Insurance requirements
approved by Broward County
Risk Management Division

By _____ 8/8/16
Signature (Date)
Risk Management Division

Jacqueline A. Binns
Print Name and Title above
Risk Insurance and
Contracts Manager

BOARD OF COUNTY COMMISSIONERS
CREATED OCT 1st 1915
BROWARD COUNTY FLORIDA

RECLAIMED WATER SUPPLY AGREEMENT BETWEEN BROWARD COUNTY AND CITY OF POMPANO BEACH

CITY

ATTEST:

_____
City Clerk

(SEAL)

CITY OF POMPANO BEACH

By See City Signature Page Attached
Mayor-Commissioner

____day of _____, 20___.

_____
City Manager

____day of _____, 20___.

APPROVED AS TO FORM:

By _____
City Attorney

"CITY":

Witnesses:

CITY OF POMPANO BEACH

By: _____
LAMAR FISHER, MAYOR

By: _____
DENNIS W. BEACH, CITY MANAGER

Attest:

_____
ASCELETA HAMMOND, CITY CLERK

(SEAL)

Approved As To Form:

_____
MARK E. BERMAN, CITY ATTORNEY

STATE OF FLORIDA
COUNTY OF BROWARD

The foregoing instrument was acknowledged before me this 1 day of July, 2016 by **LAMAR FISHER** as Mayor, **DENNIS W. BEACH** as City Manager and **ASCELETA HAMMOND** as City Clerk of the City of Pompano Beach, Florida, a municipal corporation, on behalf of the municipal corporation, who are personally known to me.

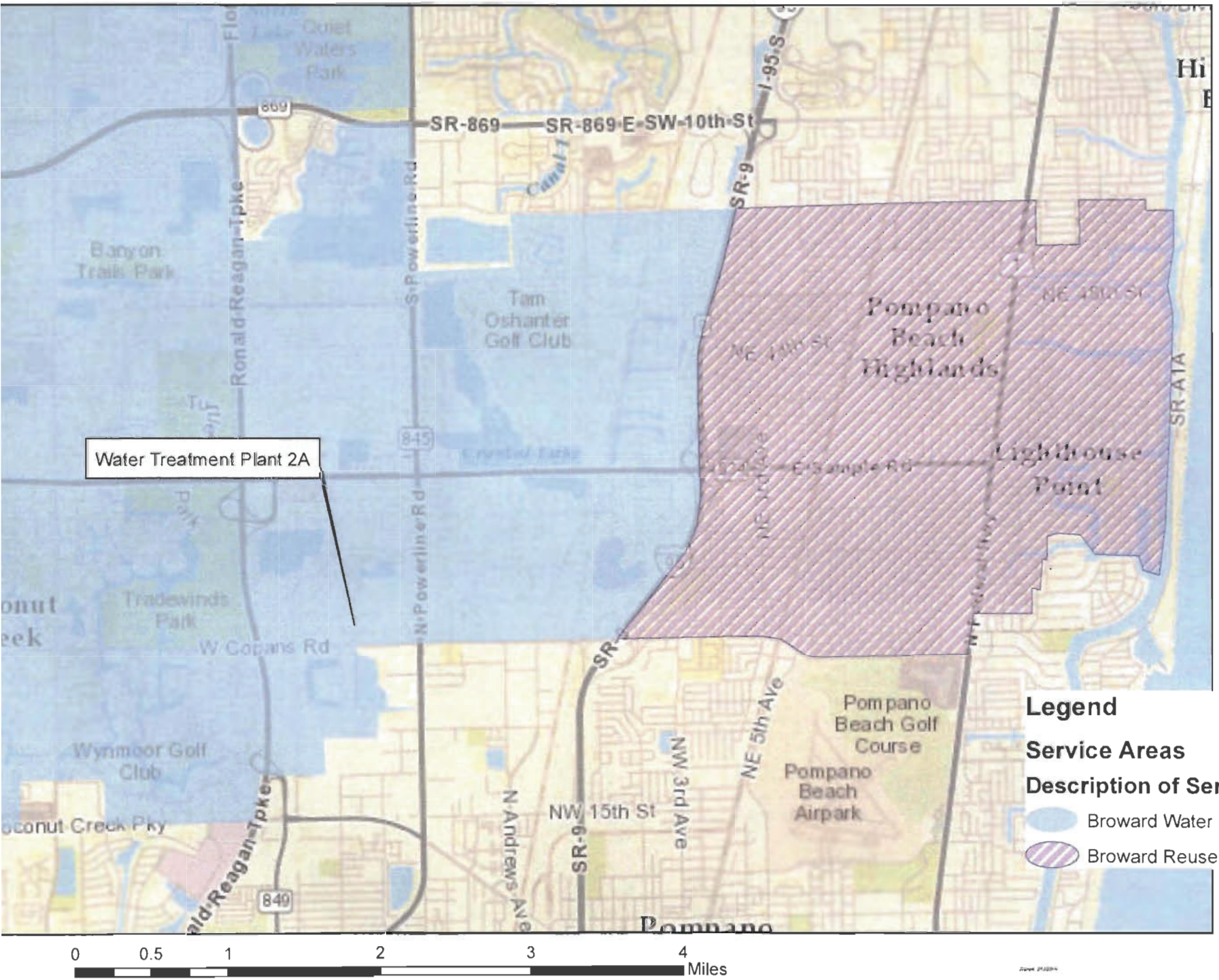
NOTARY'S SEAL:

_____
NOTARY PUBLIC, STATE OF FLORIDA

Krystal Aaron
(Name of Acknowledger Typed, Printed or Stamped)

_____
Commission Number

Exhibit A


Water Treatment Plant 2A
SR-869
SR-869-E-SW-10th-St
I-95-S
SR-9
Quiet Waters Park
Bangor Trails Park
Tam Oshanter Golf Club
Ronald-Reagan-Tpke
S-Powerline-Rd
N-Powerline-Rd
Canal-1
Pompano Beach Highlands
Lighthouse Point
NE 48th St
NE 14th St
E-Sample-Rd
SR-A1A
Tradewinds Park
W-Copans-Rd
Wynmoor Golf Club
Coconut Creek Pky
NW 15th St
N-Andrews-Ave
NW 3rd Ave
NE 5th Ave
Pompano Beach Golf Course
Pompano Beach Airpark
Pompano
Legend
Service Areas
Description of Service
Broward Water Service Area
Broward Reuse Service Area
0
0.5
1
2
3
4
Miles

8"
8"
8"
20"
NE 12TH TER

Wholesale Reuse Rates

REUSE OPERATING COSTS	ACTUAL FY 2015
Reuse Treatment Plant	
Personal Services	
Non Empt General Emp	$ 115,692
Assignment Differential	$ -
Accrued Vacation / Sick Leave	$ 23,105
Temporary & Part Time	$ -
Overtime Regular	$ -
Overtime Holiday	$ 5,104
Overtime Call-in	$ -
Stand By	$ -
FICA Taxes	$ 10,911
General Employees Retirement	$ 53,498
Education	$ -
Total Personal Services	$ 208,310
Operating Expenses	
Other Professional	$ 17,478
Central Service Charges	$ 2,897
Central Stores Charges	$ 1,229
Customer Service Charges	$ -
Insur SVC Charges - Health	$ 16,568
Insur SVC Charges - Risk Mgmt	$ 29,346
Information Tech Charge	$ 673
Water & Wastewater	$ 1,973
FAA Land Rent	$ -
Rentals & leases	$ -
Land, Buildgs, Improvements	$ -
Machinery & Equipment	$ 29,224
Special Services	$ 2,722
Reuse Meters	$ -
Office Supplies	$ 943
Chemical / Horticulture	$ 64,037
Special Supplies	$ 1,076
Software Purchases	$ -
Clothing	$ 593
Cleaning	$ -
Subtotal Reuse Treatment Plant Operating Expenses	$ 168,760
Reuse Distribution	
Salary Exempt	$ 36,381
Salary Non-Exempt	$ 122,866
Fica	$ 33,418
Other Professional	$ -
Central Svcs Chgs	$ 5,146
Central Stores Charges	$ 9,135
Insur SVC Charges - Health	$ 61,308
Insur SVC Charges - Risk Mgmt	$ 4,950
Vehicle Service Charge	$ 27,983
Information Tech Charge	$ 6,220
Travel/Education/Member	$ -
Repair & Maintenance/Land Buildings Improvements	$ 1,867
Repair & Maintenance/Machinery & Equipment	$ 17
Repair & Maintenance/Special Services	$ -
Reuse Water Meters	$ -
Operating Supplies/Small Tools/Minor Equipment	$ -
Operating Supplies/Special Supplies	$ -
Clothing	$ 1,300
Service Installation Reuse	$ -
Service Connection Reuse	$ 94,350
Subtotal Reuse Distribution	$ 404,941

Reuse Administration		FY 2015
Salary Executive	$	8,994
Salary Exempt (includes reuse coordinator position)	$	70,260
Salary Non-Exempt	$	3,354
Fica	$	8,612
Automobile	$	3,341
Engineering	$	-
Management Consulting	$	-
Other Professional	$	198
Central Services Charges	$	1,684
Central Stores Charges	$	424
Insurance Svc Chgs - health	$	19,581
Insurance Svc Chgs - risk magmt	$	1,346
Information Tech Charge	$	1,944
Travel/Education/Member	$	8,182
Telephone	$	967
Postage	$	262
Electric (to pump reuse)	$	177,977
Land, Bldgs, Improvements	$	-
Advertising	$	3,745
Office Supplies	$	32,661
Small Tools/Minor Equipment	$	-
Special Supplies	$	950
Clothing	$	463
Publications	$	200
Subtotal Reuse Administration	$	345,145
Subtotal: O&M Costs	**$**	**1,127,156**
O&M Cost per Kgal for Reuse	**$**	**1.45**
Capital Outlay Items		
Light	$	12,950
Heavy Equipment	$	41,177
Total Capital Items	$	54,127
REUSE CAPITAL COSTS		
Interfund transfer to fund 420 (R&R Fund)	$	575,000
Interfund transfer to 465	$	-
Total Other Items	$	575,000
REUSE DEBT SERVICE		
Reclaimed Water Treatment Facility	$	338,403
Reclaimed Water Distribution System Expansion	$	202,795
	$	541,197
Subtotal: Capital Costs	**$**	**1,170,324**
Capital Cost per Kgal for Reuse	**$**	**1.51**
Total Operating and Capital Costs for Reuse System	**$**	**2,297,480**
Total Cost per Kgal for Reuse	**$**	**2.96**

ALLOCATION % of OPERATING COSTS to Wholesale Reuse Customers	FY 2015
Reuse Treatment Plant	
Personal Services	
Non Empt General Emp	100%
Assignment Differential	100%
Accrued Vacation / Sick Leave	100%
Temporary & Part Time	100%
Overtime Regular	100%
Overtime Holiday	100%
Overtime Call-in	100%
Stand By	100%
FICA Taxes	100%
General Employees Retirement	100%
Education	100%
Total Personal Services	
Operating Expenses	
Other Professional	100%
Central Service Charges	100%
Central Stores Charges	100%
Customer Service Charges	0%
Insur SVC Charges - Health	100%
Insur SVC Charges - Risk Mgmt	100%
Information Tech Charge	100%
Water & Wastewater	100%
FAA Land Rent	100%
Leases and Rentals	100%
Land, Buildgs, Improvements	100%
Machinery & Equipment	100%
Special Services	100%
Reuse Meters	0%
Office Supplies	100%
Chemical / Horticulture	100%
Special Supplies	100%
Software Purchases	100%
Clothing	100%
Cleaning	100%
Cost of backflow devises	0%
Cost of rebate	0%
Annual permit renewals - Light House Point	0%
Annual meter inspections - Light House Point	0%
Total Operating Expenses	
Reuse Distribution	
Salary Exempt	0%
Salary Non-Exempt	0%
Fica	0%
Other Professional	0%
Central Svcs Chgs	0%
Central Stores Charges	0%
Insur SVC Charges - Health	0%
Insur SVC Charges - Risk Mgmt	0%
Vehicle Service Charge	0%
Information Tech Charge	0%
Travel/Education/Member	0%
Repair & Maintenance/Land Buildings Improvements	0%
Repair & Maintenance/Machinery & Equipment	0%
Repair & Maintenance/Special Services	0%
Reuse Water Meters	0%
Operating Supplies/Small Tools/Minor Equipment	0%
Operating Supplies/Special Supplies	0%
Clothing	0%
Service Installation Reuse	0%
Service Connection Reuse	0%

Reuse Administration	FY 2015
Salary Executive	0%
Salary Exempt (includes reuse coordinator position)	100%
Salary Non-Exempt	0%
Fica	0%
Automobile	0%
Engineering	0%
Management Consulting	0%
Other Professional	0%
Central Services Charges	0%
Central Stores Charges	0%
Insurance Svc Chgs - health	0%
Insurance Svc Chgs - risk magmt	0%
Information Tech Charge	0%
Travel/Education/Member	0%
Postage	0%
Telephone	0%
Electric (to pump reuse)	100%
Land, Bldgs, Improvements	0%
Advertising	0%
Office Supplies	0%
Small Tools/Minor Equipment	0%
Special Supplies	0%
Clothing	0%
Publications	0%
Subtotal Reuse Administration	

	FY 2015
Allocated O&M Costs to Wholesale Customers	
Reuse Treatment Plant	$ 377,069
Reuse Distribution	$ -
Reuse Administration	$ 248,236
Total Allocated O&M Costs to Wholesale Customers	$ 625,306
Total Projected Reuse (kgal)	
City of Pompano Beach	782,773
Light House Point	4,465
Broward County	36,500
Total Projected Reuse (kgal)	823,738
Wholesale Reuse O&M Rate per 1,000 gallons	**$ 0.76**

pompano beach
Florida's Warmest Welcome

Asceleta Hammond, CMC
City Clerk

CITY OF POMPANO BEACH
100 West Atlantic Boulevard, Room 253
Pompano Beach, Florida 33060
www.pompanobeachfl.gov

Phone: 954-786-4611
Fax: 954-786-4095

July 12, 2016

Mr. Alan Garcia, P.E.
Environmental Engineering Division Director
Broward County Water & Wastewater Services
2555 W. Copans Road
Pompano Beach, FL 33069

RE: City of Pompano Beach Resolution No. 2016-229

Dear Mr. Garcia:

Enclosed, please find a copy of Resolution No. 2016-229, along with six (6) original Reclaimed Water Supply Agreements between the City of Pompano Beach and Broward County.

Upon execution of the Agreements, please ensure one (1) original is returned to the City Clerk's office for our records.

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

Sincerely,

Asceleta Hammond, CMC
City Clerk

AH/kda
Enclosure(s)

APPENDIX F

HISTORICAL AND PROJECTED ANNUAL POPULATION AND DEMANDS

City of Pompano Beach Water Master Plan

TECHNICAL MEMORANDUM

Planning Framework

FINAL / December 2024

City of Pompano Beach Water Master Plan

TECHNICAL MEMORANDUM

Planning Framework

FINAL / December 2024

This document is released for information exchange review and planning only under the authority of M. Angelica Gregory, December 2024, Florida PE 75583.

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Abbreviations

AC	acre
AWS	alternative water supply
BEBR	Bureau of Economic and Business Research
Carollo	Carollo Engineers
County	Broward County
CUP	consumptive use permit
FAC	Florida Administrative Code
fps	feet per second
FSRS	Fire Suppression Rating Schedule
gpcd	gallons per capita day
gpd	gallons per day
gpm	gallons per minute
ISO	Insurance Services Office
LOS	level of service
MG	million gallons
MGD	million gallons per day
mg/L	milligrams per liter
MOR	monthly operating report
NFF	needed fire flow
NTU	nephelometric turbidity unity
PFAM	Population Forecast and Allocation Model
PPC	Public Protection Classification
SCADA	supervisory control and data acquisition
TAZ	traffic analysis zones
WMP	Water Master Plan
WSFWP	Water Supply Facilities Work Plan
WTP	water treatment plant

SECTION 1 PLANNING FRAMEWORK

1.1 Background

This technical memorandum presents the planning information that serves as the foundation of the hydraulic modeling and master planning analyses being completed as part of the City of Pompano Beach 2025 Water Master Plan (WMP). The technical memorandum documents projected population growth, develops water demand projections, and presents peaking factors used for planning and the hydraulic model. This memorandum also summarizes performance criteria used to evaluate the performance of the water distribution system. The memorandum provides the basis for other tasks that will be completed in the WMP project, therefore it is issued in the early stages of the WMP for review and comment by the City. This document is divided into the following sections:

- Section 1.1 - Background: This section presents the intent of the technical memorandum, which is to outline planning information for modeling and master planning purposes that needs to be vetted by the City prior to completing system evaluations and capital planning of infrastructure.
- Section 1.2 - Population Projections: Discusses the historical and future population projections for the City of Pompano Beach water service area.
- Section 1.3 - Historical Finished Water Production: Presents an analysis of the City's historical finished water data, and from it, the peaking factors selected for modeling and master planning purposes.
- Section 1.4 - Finished Water Demand Projections: Discusses the City's finished water demand projections used as the basis for modeling scenarios and planning analyses.
- Section 1.5 - Performance Criteria: Presents the criteria for evaluating the performance and design of the City's potable water distribution system and categorizes plant performance records to establish a baseline of performance for the plant.
- Section 1.6 - Planning Framework Summary: Provides a summary of the overall content found in the technical memorandum.

1.2 Population Projections

Population projections were developed as part of the City of Pompano Beach 2025 Water Supply Facilities Work Plan (WSFWP), prepared by Carollo Engineers, Inc. (Carollo), separate but parallel with the development of the City of Pompano Beach 2025 WMP Update and adopted into the latter. This section summarizes the sources and outcomes applicable to the 2025 WMP Update. For details about the population projection methodology, refer to Section 5 of the City of Pompano Beach 2025 Water Supply Facilities Work Plan.

1.2.1 Source of the Projections for the 2025 WMP

Because population projections had been reevaluated in 2022 for the filing of the City of Pompano Beach Consumptive Use Permit (CUP) Modification, it was requested by the City that such projections were to be used as a base for the update of the 2025 WSFWP, and then updated to reflect new development envisioned by the City of Pompano Beach Planning Department. The CUP Modification, in turn, utilized a series of sources consisting mainly of the 2020 WSFWP, which used the Broward County and Municipal Population Forecast and Allocation Model (PFAM) 2017 Report developed by the Broward County (County) Planning and Development Management Division.

1.2.2 Outcome and Summary of Projections used in the 2025 WMP

The latest population projection were adopted in the City's 2022 CUP Modification, which used the 2020 WSFWP data between years 2020 and 2040. As part of the 2025 WSFWP, such data was modified at the level of traffic analysis zones (TAZ) to reflect planned residential growth and total 2023 and 2024 population as officially reported by the City's Planning and Zoning Department to the Bureau of Economic and Business Research (BEBR).

Figure 1 shows the projected population growth at the TAZ level including adjustments by the Planning and Zoning Department. These adjustments include population growth and redistribution due to new development and redevelopment. Figure 1 also shows the projected change in population for planning years 2030 (the five-year outlook), 2035 (the 10-year outlook), and 2045 (the 20-year capital planning horizon). The geographic distribution of growth shown in Figure 1 is important because it shows the distribution of population-dependent water demand, which will be reflected in the respective hydraulic model scenarios and corresponding evaluations of infrastructure capacity and needs.

It should be noted that even though Figure 1 includes residential growth as part of mixed-used development (dwelling units with some commercial, industrial, or service), it does not fully reflect the location where water demands will increase because there are major water users whose water demand is non-population-dependent. Demands for those users are in addition to the demands that result from the population projections and are treated separately.

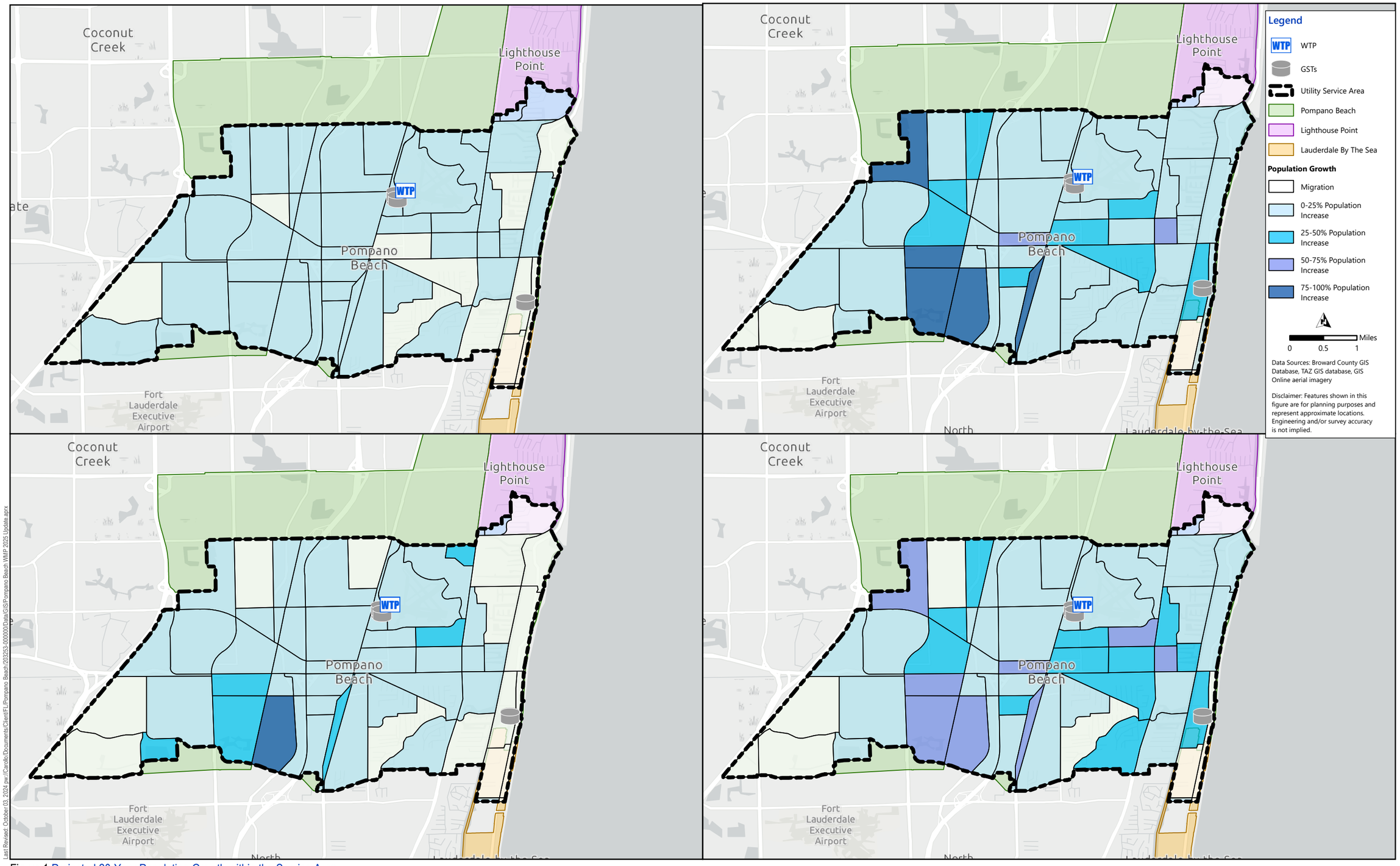

Figure 1 Projected 20-Year Population Growth within the Service Area

Table 1 compares the total historical, current, and projected permanent population within the City of Pompano Beach water utility service area. Figure 2 shows the trajectory starting in 2020 and through the planning horizon. The subsequent sections in this technical memorandum are based on the population projections summarized in Table 1 and Figure 2.

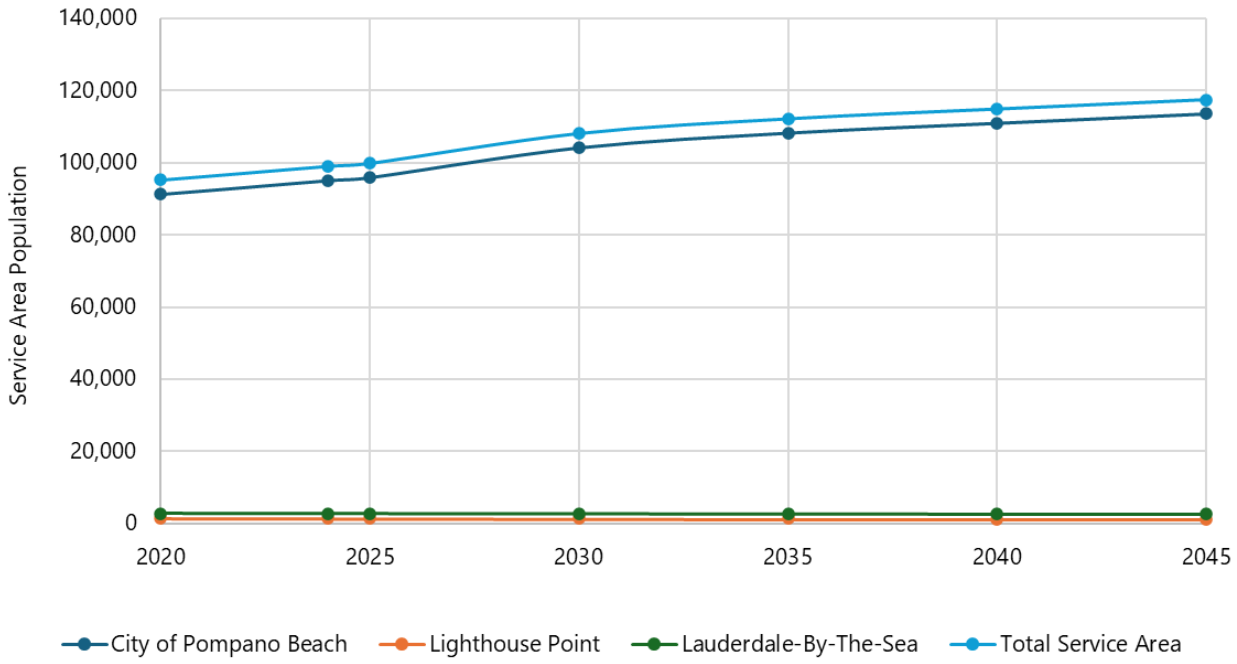

Figure 2 Population Growth Trajectory through 2045

Table 1 Population Projections Summary

Areas Served	Historical Population				Current Population	Projected Population				
	2010 (1)	2015 (1)	2020 (1)	2023	2024	2025	2030	2035	2040	2045
City of Pompano Beach	78,073	86,144	91,210	94,218 (2)	95,057 (2)	95,895	104,193	108,298	111,035	113,636
Lighthouse Point (3)	1,305	1,301	1,322	1,312	1,309	1,306	1,290	1,275	1,270	1,266
Lauderdale-By-The-Sea (3)	2,512	2,759	2,664	2,647	2,641	2,635	2,607	2,579	2,554	2,528
Total Service Area	81,890	90,204	95,196	98,177	99,007	99,836	108,090	112,152	114,859	117,430

Notes:
(1) From the City of Pompano Beach 2020 Water Supply Facilities Work Plan.
(2) Official City of Pompano Beach Planning and Zoning Department population count as submitted to BEBR, adjusted to the utility service area.
(3) Population served by the City of Pompano Beach calculated by area proportion with the official Broward County Planning Department 2024 population estimates and projections for Lighthouse Point and Lauderdale-By-The-Sea.

1.3 Historical Finished Water Production

The following sections summarize and analyze the City's historical finished water production data. Monthly operating reports (MORs) from the water treatment plant (WTP) were reviewed to assess water production trends from 2019 to 2024, as the previous WMP addressed production through 2018.

1.3.1 Annual Average Demand

The average finished water production from January 2019 through July 2024 was 14.5 million gallons per day (MGD). Figure 3 illustrates the historical trend of finished water production.

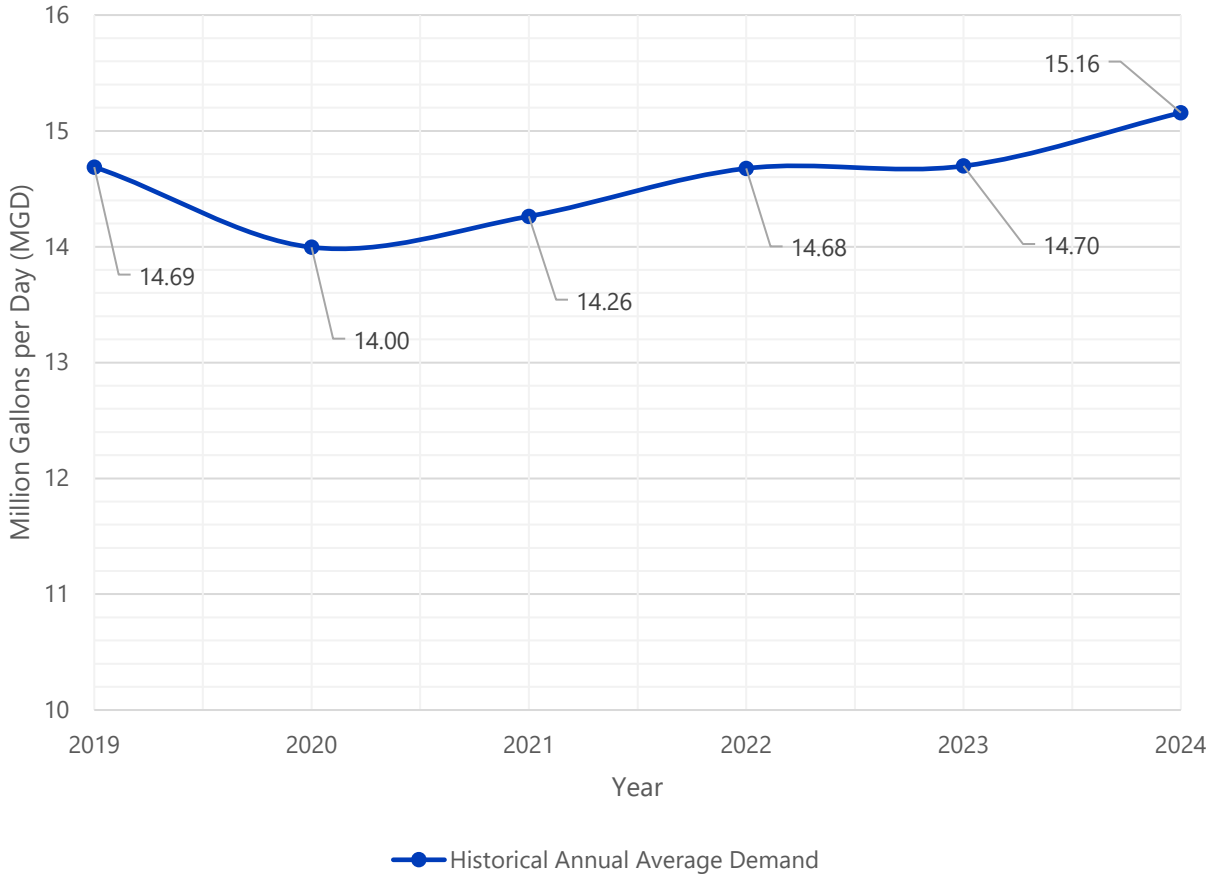

Figure 3 Five-Year Annual Average Finished Water Production

It shall be noted that the finished water demand shown in Figure 3 included services provided to large users, historically including those listed in Table 2. Each of the customers listed in Table 2 have individual/master meters.

Served areas of Lauderdale-By-The-Sea and Lighthouse Point are not considered large users for planning framework purposes given that residents within these areas are connected to the distribution network and have single meters as other customers within the City of Pompano Beach. Also, it is assumed that demand growth in these two areas will always be population-dependent, and therefore have a share in the per capita demand factor.

Table 2 Large User Historical Demand

User	Demand (gpm)		
	2020	2023	2024
Florida Textile Service, LLC	123.3	123.3	123.3
Broward County Detention Center	110.9	110.9	110.9
Pompano Business Park Owners Association	76.1	76.1	76.1
Broward Sheriff's Office	56.5	56.5	56.5
Palm Aire Resort Association	32.9	32.9	32.9
Universal Brand	16.4	16.4	16.4
Associated Grocers of Florida	14.6	14.6	14.6
Pompano Marketplace Owners	13.5	13.5	13.5
PPI, Inc. Racetrack (1)	45.3	45.3	45.3
Total (gpm)	**489.5**	**659.4**	**715.1**
Total (MGD)	**0.709**	**0.95**	**1.03**

Notes:
Abbreviations: gpm – gallons per minute
(1) Demand to be potentially replaced by redevelopment by 2025 (Live! Casino Pompano or 'The POMP').

The average production data, with and without the volumes of these large users, was also used to determine the per capita water demand factor, as described in the following section.

1.3.2 Per Capita Water Demand Factor

Actual population data for years 2020, 2023, and 2024 were used along the annual average finished water production shown in Figure 3 to determine the historical per capita water demand factor for each assessed year. Table 3 includes a calculation that includes all the production divided by the served population and another calculation that discounts large user demands from the finished water production (to obtain only population-dependent demand) divided by the served population. For future planning purposes, it is best practice to separate population-dependent demand from non-population-dependent demand, as non-population-dependent demand may be constant or does not tend to grow at the same rate or with the same drivers as the population-dependent demand.

Table 3 Historical and Current Per Capita Finished Water Demand Factor

Parameter	Year				
	2020	2021	2022	2023	2024
Population Served (1)	95,196	96,190 (1)	97,183 (1)	98,177	99,007
Avg. Daily Finished Water Production (MGD)	14.00	14.26	14.68	14.70	15.14
Overall Per Capita Demand Factor (gpcd)	**147.1**	**148.2**	**151.1**	**149.7**	**152.9**
Five-Year Average Including Large Users Demand	**149.8**				
Demand by Large Users (non-population dependent) (2)	0.71	0.79	0.87	0.95	1.03
Avg. Daily Finished Water Production minus Large Users (MGD)	13.3	13.5	13.8	13.8	14.1
Actual Per Capita Demand Factor (Discounting Large Users) (gpcd)	**139.7**	**140.3**	**142.0**	**140.6**	**142.4**
Five-Year Average Excluding Large Users Demand	**141.0**				

Notes:
Abbreviations: gpcd - gallons per capita day
(1) Interpolated from actual 2020 and 2023 values.
(2) Interpolated using 2020 and 2025 values. The increase is only due to proposed demand by the Isle Casino large user.

The results shown in Table 3 are lower than the per capita values reported in the previous Master Plan, which suggest that water conservation and reuse have had a notable effect in the level of service. Moreover, the values in Table 3 carry low uncertainty as finished water meters at the WTP were replaced at the end of 2018.

It is proposed to the City that the five-year average demand factor of 141 gallons per capita is selected for use in master planning.

When used to project demands, it should be noted that this 141 gallons per capita day (gpcd) demand factor does not include large users, therefore, the large user water demands should be added on top of the population-dependent demand, with the assumption that their demand will remain constant in the future, unless planned for redevelopment.

Finished water demand projections were calculated by multiplying the population projections listed in Table 1 by the 141 gpcd factor, plus large user demands. Finished water demand projections are presented in Section 1.4.

1.3.3 Diurnal Pattern Analysis

Finished water issued to the distribution system from the WTP is a function of the system demand and the filling of the Indian Mound elevated storage tank. Figure 4 shows this function in terms of a demand factor, where a 1.0 factor indicates flow comparable to the 2024 annual average of 15.14 MGD.

When the demand (including the filling of Indian Mound) increases, pressure drops in the system, which triggers the high service pumps to start. Both ground storage tanks at the WTP are used to balance this operation daily.

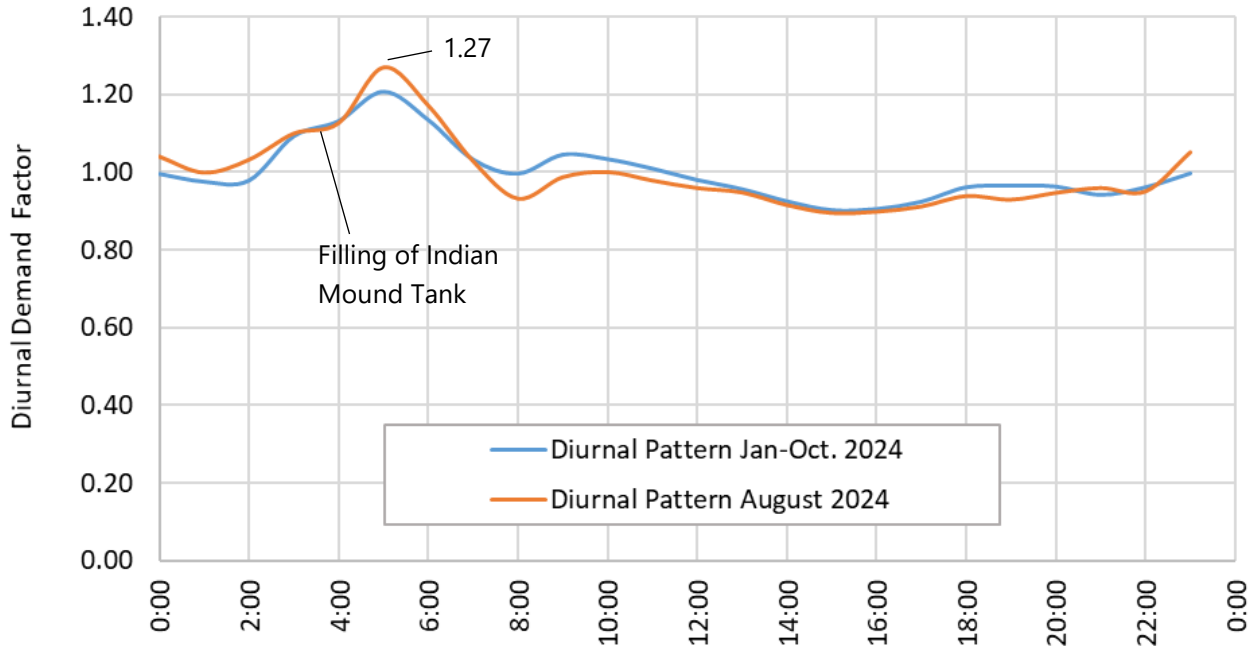

Figure 4 Water Treatment Plant Diurnal Production Pattern

The overall demand diurnal pattern shown in Figure 4 is made up of different types of water users including residential, commercial, industrial and institutional/school. Figure 5 shows an approximation to each of the diurnal pattern types for the months of March 2024 and August 2024 (the months with the least and the greatest consumption over a typical year, respectively). These patterns were derived from hourly consumption metered by the City for billing purposes and retrieved only for a select number of representative accounts of each type for this memorandum. These diurnal patterns inform the difference in consumption over a typical day between different land uses and will be used in the hydraulic model effort associated with the Master Plan Update.

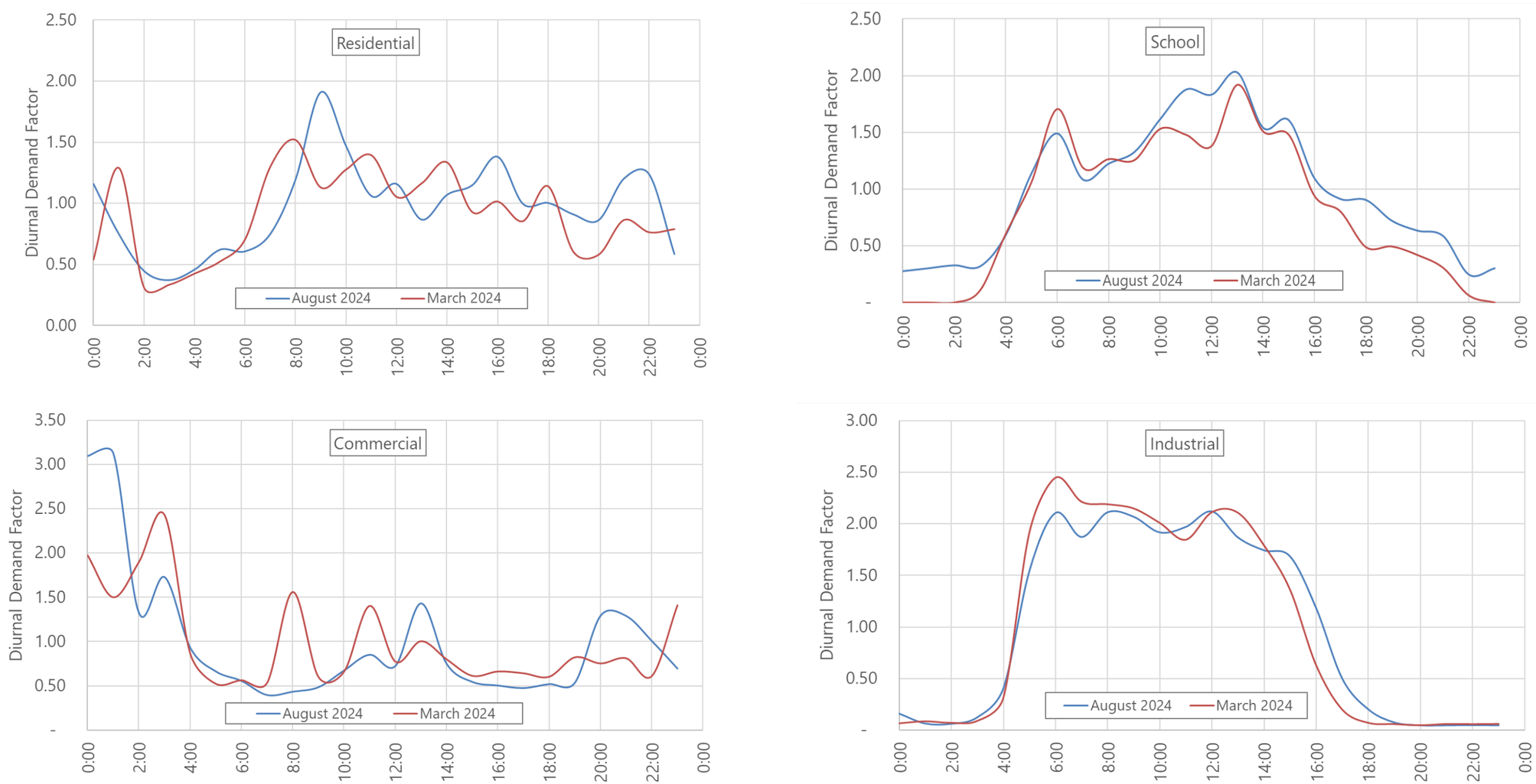

Figure 5 Diurnal Patterns by Account/Meter Type

1.3.4 Water Demand Peaking Factors

Historical data was further evaluated to update the City's potable water system peaking factors. Peaking factors are used in master planning to assess different demand scenarios, which can be used to identify necessary capital project needs and regulatory constraints. The following subsections summarize the water system peaking factors used in the modeling and master planning evaluations.

1.3.4.1 Monthly Peaking Factors

Monthly peaking factors are crucial for analyzing water supply and distribution because they reflect the seasonal demand fluctuations from customers. The following sections examine typical monthly variations in finished water demand in the City's water system based on historical data. Data trends are also reviewed to identify changes in water usage patterns.

The City's finished water production data was analyzed to determine the average monthly peaking factors from January 2019 to August 2024. These results are summarized in Table 4. These monthly peaking factors range from 0.91 to 1.11 times the average demand for each month.

Table 4 Water System Historical Monthly Peaking Factors

Year	Month											
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2019	1.02	1.00	1.02	1.09	1.02	1.02	1.03	0.92	0.96	1.00	0.96	0.97
2020	1.02	1.03	1.10	1.10	1.01	0.98	0.98	0.97	0.96	0.95	0.92	0.99
2021	1.01	1.00	1.06	1.07	1.11	1.02	0.96	0.98	0.97	0.94	0.93	0.95
2022	0.93	0.98	1.03	1.03	1.02	0.96	1.05	1.05	1.02	0.97	0.98	0.99
2023	1.09	1.02	1.09	1.01	1.05	0.91	0.92	0.96	0.95	1.02	0.99	0.97
2024	0.94	0.96	0.96	1.06	1.07	1.01	1.02	0.99	0.90	(1)	(1)	(1)
Minimum Peaking Factor	0.93	0.96	0.96	1.01	1.01	0.91	0.92	0.92	0.95	0.94	0.92	0.95
Average Peaking Factor	1.00	1.00	1.04	1.06	1.05	0.98	0.99	0.98	0.97	0.98	0.95	0.97
Maximum Peaking Factor	1.09	1.03	1.10	1.10	**1.11**	1.02	1.05	1.05	1.02	1.02	0.99	0.99
Maximum Month Peaking Factor	**1.11**											

Notes:
(1) To be determined as this draft report is issued in October of 2024.

1.3.4.2 Maximum Month Peaking Factor

Maximum month demand is defined as the average daily demand during the highest demand month throughout a year. Figure 6 shows the annual maximum month peaking factor from 2019 to 2024. A peaking factor of 1.11 is used for calculating future maximum month demands for master planning purposes.

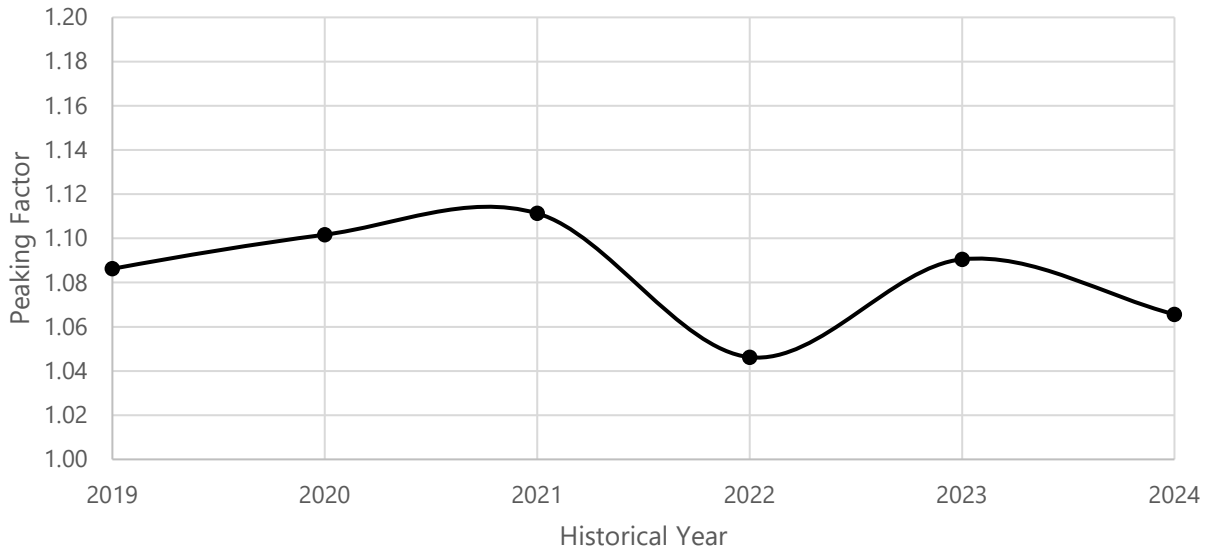

Figure 6 Maximum Month Peaking Factor Fluctuation 2019-2024

1.3.4.3 Maximum Day Peaking Factor

Finished daily water production data from the WTP, covering January 2019 through August 2024, was used to calculate the maximum day peaking factor. This factor is essential for sizing water treatment plant equipment, optimizing processes, and conducting fire flow analysis for water distribution systems.

Table 5 provides a summary of the historical average annual demand, maximum demand, and maximum day peaking factor for each year 2019 through 2024. The data shows that the City's maximum day peaking factor has varied over the past five years.

An average peaking factor of 1.25 was observed during the period, with the highest peaking factor of 1.35 recorded in 2020, and the lowest of 1.18 in 2019.

Table 5 Water System Maximum Day Peaking Factors

Year	Average Annual Production (MGD)	Maximum Day Production (MGD)	Maximum Day PF
2019	14.7	17.4	1.18
2020	14.0	19.0	1.35
2021	14.3	17.5	1.23
2022	14.7	18.3	1.24
2023	14.7	18.9	1.29
2024	15.1	18.3	1.21
		Minimum PF	**1.18**
		Average PF	**1.25**
		Maximum PF	**1.35**

1.3.4.4 Peak Hour Factor

Hydraulic modeling analyses use peak hour demands to determine the distribution system's ability to meet demand and for sizing of network elements. Peak hour factors are derived from diurnal data analysis and from maximum day data. For this WMP, a peak hour factor is calculated by multiplying the maximum diurnal peaking factor of 1.27 (as shown in Figure 4) by the maximum day peaking factor of 1.35, for a resulting peak hour factor of 1.71. This demand factor is applied to the annual average demand in the hydraulic model in a steady-state scenario to simulate the highest demand condition (peak hour) in the distribution system for future conditions.

1.4 Finished Water Demand Projections

Annual average, maximum month, and maximum day finished water demand projections were developed for 2025 (or near existing conditions), 2030 (short-term), 2040 (long-term), and 2065 (or ultimate build out). Ultimate buildout demand projections are provided for consistency with requirements set forth by the South Florida Water Management District for utilities participating in the C-51 Reservoir alternative water supply (AWS) effort.

The demand projections are used in the future scenarios of the water distribution system hydraulic model. The following sections identify demand projection results.

1.4.1 Average Annual Demand Projections

Average annual demand projections determine the demand on an annual average basis. The average annual projected demand that is population-dependent is calculated by multiplying the population projected by each planning period by the updated per capita demand factor of 141 gpcd. Non-population-dependent demand, which is comprised of the large users listed in Table 2 plus new projected large users, is added to the population-dependent demand to obtain the total average annual demand.

1.4.1.1 Population-Dependent Demand Projections

Population projections for the City's water service area boundary were calculated as described in Section 1.2. Service area population projections and their geographic distribution are reported in Table 1 and Figure 1, respectively. These population projections do not include large users within the City's service area.

Calculations indicate that population-dependent demand made up 93.5 percent of the total demand in 2023 and 93.2 percent of the total demand in 2024. It is projected that this population-dependent demand percentage will decrease slightly throughout the 20-year and 40-year projections, and the large user demand is projected to increase, although minimally, due to mixed use redevelopment.

For 2025 through 2065, the per capita demand factor of 141 gpcd was used along with the population projections to derive the population-dependent demands. Based on the analysis, the population-dependent demand for 2030 was 15.24 MGD and can be expected to increase to 16.56 MGD by 2045 and to 16.84 MGD in 2065. Resulting population-dependent demand projections are listed in Table 7.

1.4.1.2 Non-Population Dependent or Large User Demand Projections

The City currently serves customers that are considered large users, as listed in Table 2. It is assumed that the demand from these users will remain constant throughout the planning horizon, except for Live! Casino at Pompano (now known as 'The POMP', previously PPI, Inc.), Oceanside Pompano Park, Barrier Island, and the Palm Aire new mixed use developments, which are planned to be built in phases. Assumptions about these developments as provided by the City include the following:

- The Live! Casino at Pompano is undergoing a major expansion. The proposed development area is located in the City, bordered by Pompano Park Place to the north, Cypress Bend Drive to the south, Powerline Road to the east, and the Seaboard Coast Line railroad tracks to the west. Currently, the Casino site is served by three public water supply meters, but most of the proposed development area lacks access to potable water distribution lines. The surrounding water utility service is primarily for commercial and residential properties. The development will include residential units, an office complex, a theatre, casino, and other commercial businesses. It is assumed that the commercial areas will be completed by 2025, along with approximately 50 percent of the commercial recreation area, totaling to 266,500 gallons per day (gpd) or 185.1 gallons per minute (gpm). The racetrack and its historical demand of 45.0 gpm are to be removed and replaced with the 185.1 gpm. By 2030, the remainder of the commercial recreation is assumed to be completed, along with the office and residential units, for a total demand of 748,631 gpd or 519.9 gpm. The large user demand for the Live! Casino at Pompano throughout the planning years is included in Table 6.
- Carollo has also included the Oceanside Pompano Beach planned development into the large user demand. This development will consist of a 24-story building with 77 multifamily units, 303 hotel/condo units, a spa, banquet facilities, restaurants, retail/office space, bars, and outdoor dining. The development will expand over 161,250 square feet (3.7 acre) of land and is anticipated to be completed in 2027. The Oceanside Pompano Beach development's projected demand of 111,285 gpd (77.28 gpm) has been incorporated into the demand projections listed in Table 6. For planning purposes in calculating demands, the 77 residential units were not included in the population projections or population-dependent demand calculations as they are accounted for in this large user demand.

- The Barrier Island development and the Palm Aire new development both consist of mixed-use construction. It is assumed that they will be connected to potable water utilities in phases, starting with one-fourth of their demand in 2025. It is expected that there are built-out by 2030, as reflected in Table 6.

Table 6 lists the constant and variable projected demands from large users including the Live! Casino at Pompano, Oceanside Pompano Peach, Barrier Island, and Palm Aire through the planning horizon.

Table 6 Large User Demands

User	Demand (gpm)			
	2025	2030	2040	2065
Florida Textile Service, LLC	123.3	123.3	123.3	123.3
Broward County Detention Center	110.9	110.9	110.9	110.9
Pompano Business Park Owners Association	76.1	76.1	76.1	76.1
Broward Sheriff's Office	56.5	56.5	56.5	56.5
Palm Aire Resort Association	32.9	32.9	32.9	32.9
Universal Brand	16.4	16.4	16.4	16.4
Associated Grocers of Florida	14.6	14.6	14.6	14.6
Pompano Marketplace Owners	13.5	13.5	13.5	13.5
Live! Casino at Pompano (The POMP) (1)	185.1	519.9	519.9	519.9
Oceanside Pompano Beach	0.0	77.3	77.3	77.3
Barrier Island Development	**20.7**	**82.6**	**82.6**	**82.6**
Palm Aire new Development	**39.0**	**156.0**	**156.0**	**156.0**
Total (gpm)	**689.0**	**1,280.0**	**1,280.0**	**1,280.0**
Total (MGD)	**0.99**	**1.84**	**1.84**	**1.84**

Notes:
(1) Planned in two phases by 2025 and 2030.

Table 7 shows the resulting annual average demand projections, including the population-dependent and large user demand components. Based on the analysis, the average daily water demand of 2024 which was 15.14 MGD can be expected to increase to 18.89 MGD by 2045 and to 19.18 MGD by 2065 when only continuing service to the current customer base.

Table 7 Annual Average Finished Water Demand Projections

Year	Projected Service Area Population	Annual Average (MGD) (1)	Annual Average with Large Users (MGD) (2)
2025	99,836	14.08	15.07
2030	108,090	15.24	17.08
2035	112,152	15.81	17.65
2040	114,859	16.20	18.04
2045	117,430	16.56	18.40
2050	119,027	16.84	18.62
2055	119,427	16.84	18.68

Year	Projected Service Area Population	Annual Average (MGD) (1)	Annual Average with Large Users (MGD) (2)
2060	119,427	16.84	18.68
2065	119,427	16.84	18.68

Notes:
(1) Per capita demand factor of 141 gpcd applied.
(2) Includes large users projected demands as summarized in Table 6.

1.4.2 Maximum Month Demand Projections

Maximum month demand is defined as the average demand during the highest demand month throughout the year. Finished water demand from the past 10 years was used to determine the monthly peaking factors. A maximum month peaking factor of 1.11 was applied to the average annual demand projections to determine the maximum month water demands. Based on the analysis, the maximum month demand for January through October 2024 was 16.81 MGD and can be expected to increase to 20.42 MGD by 2045 and to 20.73 MGD by 2065. The resulting maximum month demand projections are listed in Table 8.

1.4.3 Maximum Day Demand Projections

Maximum day demands are used for sizing treatment facilities, fire flow availability determination, and evaluation of storage capacity. Historical daily finished water production data from 2014 to 2024 was evaluated to determine the overall maximum day peaking factor. A maximum day peaking factor of 1.35 was applied to the average annual demand projections to determine the maximum day water demands. Based on the analysis, the maximum day demand for 2024 was 20.38 MGD and can be expected to increase to 24.84 MGD by 2045 and to 25.22 MGD by 2065 based on the selected peaking factor. The resulting maximum day demand projections are listed in Table 8.

1.4.4 Peak Hour Demand Projections

Peak hour demand projections are used for sizing the distribution pump stations. Modeling analyses consider peak hour demands to determine the distribution system's ability to meet this demand condition. The peak hour demand factor is calculated by applying the maximum diurnal peaking factor of 1.27 to the maximum day peaking factor of 1.35, for a total peak hour factor of 1.71. This demand factor can be applied to annual average demands in the City's model in a steady-state scenario to simulate the distribution system's highest potential demand condition (peak hour). Based on the analysis, the peak hour demand for 2024 was 25.82 MGD using the selected peaking factor and can be expected to increase to 31.46 MGD by 2045 and to 31.94 MGD in 2065. Table 8 includes a summary of peak hour demand projections.

1.4.5 Summary of Finished Water Demand Projections

Table 8 summarizes the finished water demand projections proposed for use in the City of Pompano Beach Water Master Plan 2025 Updates and its analyses.

Table 8 Finished Water Demand Projections

Year	Projected Service Area Population	Annual Average(1)	Annual Average with Large Users(2)	Maximum Month	Maximum Day	Peak Hour(3)
		Peaking Factors				
				1.11	1.35	1.71
		Projected Water Demands (MGD)				
2025	99,836	14.08	15.07	16.72	20.34	25.76
2030	108,090	15.24	17.08	18.96	23.06	29.21
2035	112,152	15.81	17.65	19.60	23.83	30.19
2040	114,859	16.20	18.04	20.02	24.35	30.84
2045	117,430	16.56	18.40	20.42	24.84	31.46
2050	119,027	16.78	18.62	20.67	25.14	31.85
2055	119,427	16.84	18.68	20.73	25.22	31.94
2060	119,427	16.84	18.68	20.73	25.22	31.94
2065	119,427	16.84	18.68	20.73	25.22	31.94

Notes:
(1) Per capita demand factor of 141 gpcd applied.
(2) Includes projected demands of large users as summarized in Table 6.
(3) Calculated using diurnal peaking factor for August 2024 multiplied by five-year historical maximum day peaking factor.

Figure 7 is a graphical representation of the historical water production and the finished water demands as projected in Table 8. The projected water demands are anticipated to increase at a steady incremental growth throughout the 20-year planning horizon and stabilize by buildout. The annual average demand with large users is projected to increase roughly 3.33 MGD within the 20-year planning period, and 3.61 MGD within the 40-year planning period.

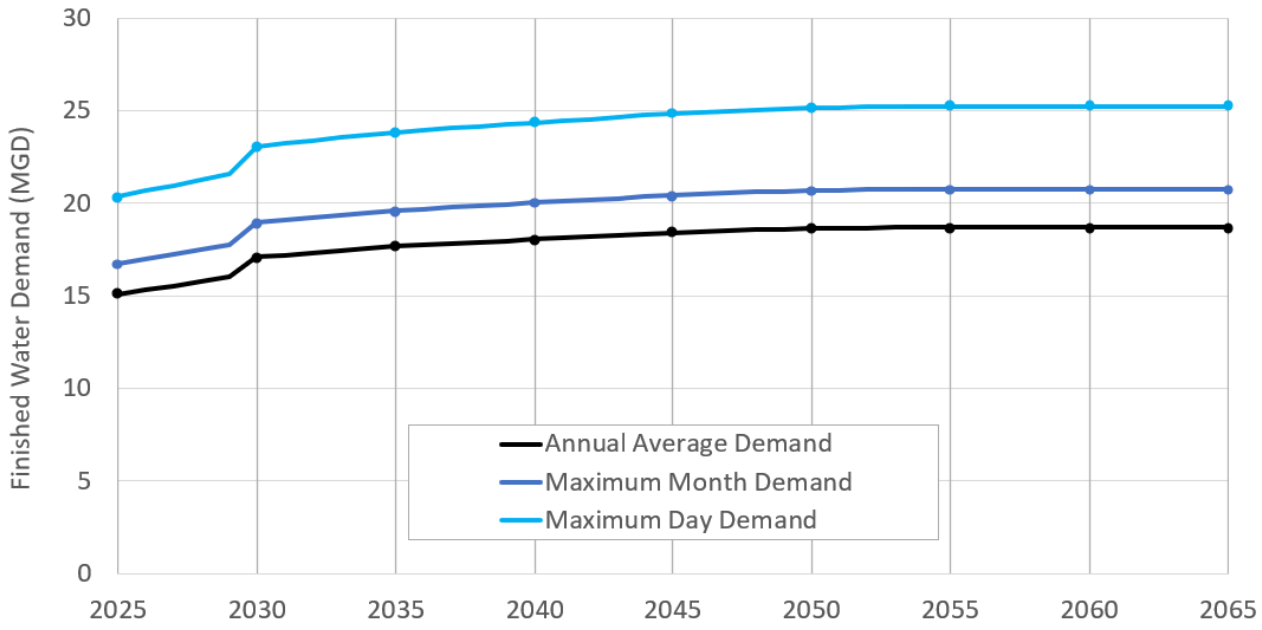

Figure 7 Projected Finished Water Demands

1.5 Performance Criteria

This section defines the criteria for evaluating the performance and design of the City's potable water distribution system and establishes a baseline for the WTP. By comparing the system's capabilities with these criteria, existing or future deficiencies can be identified, helping guide capital improvement projects and budget planning. The criteria are based on applicable regulations, including the Florida Administrative Code (FAC), Broward County, Ten State Standards, and commonly accepted engineering practices. These standards are used to assess the network and recommend future improvements.

1.5.1 Water Distribution Network Performance Criteria

Performance criteria for the distribution network covers the following areas:

- Water system reliability to ensure that the infrastructure in the distribution system can deliver water within the desired level of service.
- System operational requirements to ensure that water can be delivered reliably under fire flow, high demand, or other extreme or unusual operating conditions.

System operational requirements refer to the level of service provided by a utility to the customer. Levels of service include many parameters such as facility capacity, maximum and minimum pressures, maximum flow velocities, and provisions for emergency conditions. Adequate pressure is usually defined in terms of a minimum pressure under certain demand conditions, such as peak hour or fire flow. Adequate fire protection refers to providing adequate flow to meet firefighting demand. The water system is considered adequate when system demand conditions are met while meeting system performance criteria such as system pressure, pipeline velocity, and pipeline headloss.

1.5.1.1 Transmission and Distribution Mains

Distributing water to the consumer requires a system capable of meeting instantaneous demands that vary with the time of day and season of year. However, sizing all facilities on this basis would result in designs that are oversized and costly, which are only fully utilized during certain portions of the year. Tanks serve as a source of supply when daily fluctuations in demand exceed production capabilities.

Transmission and distribution mains must be able to meet instantaneous peak demands. Therefore, they are sized for the greater of the following two demand conditions: maximum day demand plus fire flow, or peak hour demand.

The following pressure criteria are used to assess the adequacy of the water distribution system under these two demand conditions:

- Peak Hour Demand: Pressures must be greater than 50 pounds per square inch (psi) and less than 80 psi.
- Maximum Day Demand plus Fire Flow: A minimum of 20 psi at the point of the maximum fire draft.

In addition to the pressure criteria in the distribution system listed above, pipelines must meet the following velocity and headloss criteria:

- Velocity:
  - Velocity less than or equal to 6 feet per second (fps) under average annual demand conditions.
  - Velocity less than or equal to 7 fps under maximum day demand conditions.
  - Velocity less than 8 fps under peak hour demand conditions.
  - Velocity less than 10 fps under fire flow conditions.
- Headloss:
  - Under maximum day demand conditions: Headloss less than 3.5 feet per 1,000 feet for pipes 36 inches in diameter or larger. Headloss less than 5.5 feet per 1,000 feet for pipes with a diameter greater than or equal to 24 inches and less than 36 inches.
  - Under peak hour demand conditions: Headloss less than 4.5 feet per 1,000 feet for pipes 36 inches in diameter or larger. Headloss less than 7.5 feet per 1,000 feet for pipes with a diameter greater than or equal to 24 inches and less than 36 inches.
  - Headloss less than 10 feet per 1,000 feet for pipes with a diameter less than 24 inches for both peak hour and maximum day demand conditions.

1.5.1.2 Pump Stations

Usually pump stations are the most critical components in a distribution system with respect to meeting reliability and redundancy criteria because these facilities are subject to disruptions such as power outages, mechanical failures, and line breaks.

Pump stations should be designed based on the firm capacity that can be consistently provided with the largest pump out of service. The capacity of a pump station combined with the useful storage capacity should be sufficient to meet the pump station's service area peak hour water demand for at least four consecutive hours.

1.5.1.3 Emergency and Fire Flow

Fire flow requirements are usually defined by local fire departments, insurance requirements, or local ordinances. Minimum required fire flow rates and flow durations are specified in the Florida Building Code for building areas according to construction type. It is assumed that a major fire will not occur in the peak hour since the chance of this happening is minimal. It is slightly more likely that a fire will occur at the same time as the maximum day demand. Consequently, this demand condition will be used for modeling fire flow events.

The Insurance Services Office (ISO) evaluates information from communities in the United States on their fire suppression capabilities, and it determines the Public Protection Classification (PPC) through a field survey. Four parameters are evaluated through the Fire Suppression Rating Schedule (FSRS): emergency communications system, fire department, water supply, and community risk reduction. The water supply system is evaluated to determine the adequacy for fire suppression purposes. The City of Pompano Beach Fire Department has received an ISO Class I rating certificate. This certificate specifies a required or needed fire flow (NFF) at many buildings throughout the City. Fire hydrants that serve buildings with ISO-specified NFF are distributed across the entire utility service area.

The ISO fire flow assignment depends on several parameters. To determine the needed fire flow, the ISO guidelines specify the following formula:

$$NFF_i = (C_i)(O_i)\{1 + (X + P)_i\}$$

Where:

NFF_i Is the needed fire flow in gpm.

(C_i) A factor related to the type of construction and effective area.

(O_i) A factor related to the type of occupancy.

X A factor related to the exposure hazard of adjacent buildings.

P A factor related to the communication hazard with adjacent buildings.

The construction factor, (C_i), is calculated with the following formula:

$$C = 18F(\sqrt{A})$$

Where:

A = effective area.

F = Coefficient related to the class of construction, as described in Table 9.

Table 9 Construction Factor by Construction Class

F coefficient	Construction Class	Construction Type
1.5	Class 1	Frame
1.0	Class 2	Joisted-Masonry
0.8	Class 3	Non-Combustible
0.8	Class 4	Masonry Non-Combustible
0.6	Class 5	Modified Fire Resistive
0.6	Class 6	Fire Resistive

The occupancy Factor, (O_i), is described in Table 10.

Table 10 Occupancy Factor

Occupancy Factor (O)	Combustibility Class	Example
0.75	C-1 (Non-combustible)	Storing asbestos, clay, glass, marble, stone or metal products and some metalworking occupancies.
0.85	C-2 (Limited combustibility)	Banks, barber shops, beauty shops, clubs, habitational occupancies, hospitals, offices, educational institutions.
1.00	C-3 (Combustible)	Food markets, wholesale and retail occupancies.
1.15	C-4 (Free Burning)	Cotton bales, furniture stock, and wood products.
1.25	C-5 (Rapid Burning or Flash Burning)	Ammunition, excelsior, explosives, mattress manufacturing, matches, upholsterers.

The exposure factor,X_i, depends upon the construction and length-height ratio, and the distance between facing walls of the subject building and the exposure building. The communications factor, P, depends on the protection for communicating party-wall openings and the length and construction of communications between fire divisions.

For purposes of the City's Water Master Plan, a standard fire flow criterion equivalent to the NFF at each of the specified non-compliant sites, plus domestic demand at a residual pressure of 20 psi is used for evaluation purposes. To evaluate firefighting capabilities at fire hydrants in proximity of a site without an ISO NFF specification, a minimum of 1,000 gpm is used.

To assess the adequacy of the water system with respect to the maximum day demand plus fire allowance in the water distribution model, the resulting fire flow requirements are allocated to the model junction in closest proximity to the fire hydrant that serves each incumbent building. This is done using GIS-based geoprocessing tools.

1.5.1.4 Storage Facilities

The principal function of storage is to provide reserve supply for: 1) operational equalization, 2) fire reserve, and 3) emergency needs. Because production facilities are typically designed to operate at a steady rate over an extended period of time, storage tanks serve to accommodate fluctuating demands. Operational storage is directly related to the amount of water necessary to meet peak demands. The intent of operational storage is to provide the difference in quantity between the peak demands and the system's reliable available supply. The volume of water allocated for emergency use can be selected based on the historical record of emergencies experienced; the amount of time that is expected to occur before a hypothetical emergency can be corrected; and the amount of storage and pumping capacity redundancy in the system.

Factors included in designing storage tank capacity are daily demand fluctuations, fire demand, and emergency reserve storage. Storage facilities should be designed and operated to meet these conditions, while achieving turnover to minimize water quality degradation. The storage requirements are outlined in the following sections and the City's available storage is further discussed in Chapter 7 of the WMP.

Storage for Diurnal Demand Fluctuations (Operational Storage)

Operational storage is the amount of desirable stored water in a system to regulate fluctuations in demand so that extreme variations will not be imposed on the sources of supply. With operational storage, system pressures are improved and stabilized to better serve customers throughout the service area. Operational storage is commonly estimated between 25 and 50 percent of the maximum day demand.

According to Florida Administrative Code Rule 62-555.320(19), the total useful finished water storage capacity (excluding any storage capacity for fire protection) must at least equal 25 percent of a system's maximum day water demand. A volume less than described is acceptable if the system can demonstrate that the total useful finished water storage capacity (excluding any storage capacity for fire protection) is sufficient for: 1) operational equalization, and 2) meeting the water system's peak hour demand for four consecutive hours. For operational storage planning, a value of 25 percent of maximum day demand is used for City of Pompano Beach evaluations.

Storage for Fire Demand

Fire storage is the amount of water required when the capacity of the production facilities is insufficient to meet the necessary maximum day demand plus fire flow demands for a particular duration of time. Fire flow demands in the City are based on its ISO Class I rating (FSRS). The fire flow duration for determining storage was based on an assumed 4-hour fire duration at the City's highest ISO Class I building NFF rate of 7,000 gpm, which results in a fire storage reserve of 1.68 MG.

In the past, population also has been used to estimate the recommended fire storage. Fire demand rates and storage volumes were determined using criteria established by the American Insurance Association (AIA) according to the following equation:

$$G = 1,020\sqrt{P}\left(1 - 0.01\sqrt{P}\right)$$

Where:

G = fire demand rate, gallons per minute (gal/min)

P = population in thousands

In contrast to the minimum requirement of 1.68 million gallons (MG) for fire storage reserve, this equation is based on population, which increases over time. While this equation was used frequently in the past to size fire storage, many utilities are moving away from this approach since the international building code revised its fire flow requirements to include sprinkler systems. However, it can be used for comparison purposes and to provide a conservative guideline. Table 11 compares the City's 1.68 MG requirement with calculations for determining fire protection storage over time based on AIA guidelines using the 4-hour fire duration.

Table 11 Required Fire Flow and Fire Reserve Storage

Year	Population	Population in Thousands	Fire Flow Rate (gpm)	AIA Fire Reserve Storage (MG) (1)	Minimum Fire Reserve Storage (MG) (2)
2025	99,836	99.84	9,173	2.20	1.68
2030 (5-year)	108,090	108.09	9,502	2.28	1.68
2035 (10-year)	112,152	112.15	9,658	2.32	1.68
2045 (20-year)	117,430	117.43	9,855	2.37	1.68
2065 (Build Out)	119,427	119.43	9,929	2.38	1.68

Notes:
(1) Recommended fire storage based on American Insurance Association guidelines.
(2) Minimum fire storage requirement based on a 4-hour fire and the City's highest ISO class I NFF rate of 7,000 gpm.

As shown in Table 11, the City's minimum requirement is less than the storage reserve recommended by AIA. The WMP analyses are based on the City's minimum requirement of 1.68 MG. Further evaluation can be performed to determine if the City also is able to meet the higher, more conservative storage volumes recommended by AIA.

Storage for Emergency Reserve

Emergency storage capacity is an additional volume of water that is held in storage tanks to meet various emergency conditions, such as facility outages, pipeline failures, pump failures, or natural disasters such as hurricanes. The amount of emergency storage that a utility should plan for is largely based on professional judgment and is influenced by a number of factors such as power outage history, line break frequency, interconnects, and overall supply redundancy.

Typical emergency storage for a system with a single pump station should be equivalent to two hours of the peak system demand (Qasim, et. al, 2000). Systems with more than one pumping source theoretically would need less emergency storage; however, to maintain a conservative volume of storage, this criterion will be used for master planning purposes. During the past year, a two-hour duration of the peak demand flow rate was approximately equal to 11.3 percent of the maximum day demand. Therefore, for planning purposes and the fact that the City owns two HSPS which can operate independently, the required storage volume will be set at 10 percent of maximum day demand for emergency reserve.

Water Age

The age of water at any node in the network is the time of travel to the node or "retention time." Areas with atypical water age and/or no change in water age throughout the simulation period are identified as areas of concern. The Water Industry Database (AWWA and AwwaRF, 1992) indicates an average distribution system retention time of 1.3 days and a maximum retention time of 3.0 days, based on a survey of more than 800 U.S. utilities. The literature cites examples of the effects of both "short" (i.e., less than 3 days) and "long" (i.e., greater than 3 days) water age (Environmental Protection Agency (EPA), 2002).

Water age is a function primarily of water demand, system operation, and system design. As water demand increases, the amount of time any given gallon of water remains in the distribution system decreases. Demand is related to land use patterns, types of commercial-industrial activity present in a community, weather (i.e., lawn watering), and water use habits of the community (i.e., conservation practices, reuse practices). Low water quality or no water mixing (stagnant areas) are usually accompanied by low finished water demand. Water age varies from community-to-community as a result of these factors. Water age, or retention time of water in the pipes of the distribution system, is assessed under average daily annual conditions.

1.5.1.5 Water Distribution System Performance Criteria Summary

Table 12 summarizes the proposed performance criteria for the WMP. The model was used to determine if the existing pipe velocities and system pressures satisfy the selected performance criteria under each demand condition. Fire flow criteria is evaluated at a junction representing each existing fire hydrant.

Table 12 Water System Performance Criteria Summary

Description/Demand Condition	Criteria
System Pressure Criteria	
Average Annual, Max Day, and Peak Hour	50 psi and 80 psi
Fire Flow Condition	20 psi at flowing hydrant
Pipeline Headloss Criteria	
Maximum Day	
Pipe Diameter < 24"	10 ft per 1,000 ft
Pipe Diameter 24" to less than 36"	5.5 ft per 1,000 ft
Pipe Diameter ≥ 36"	3.5 ft per 1,000 ft

Description/Demand Condition	Criteria
Peak Hour	
Pipe Diameter < 24"	10 ft per 1,000 ft
Pipe Diameter 24" to less than 36"	7.5 ft per 1,000 ft
Pipe Diameter ≥ 36"	4.5 ft per 1,000 ft
Pipeline Velocity Criteria	
Average Annual	≤ 6 fps
Maximum Day	≤ 7 fps
Peak Hour	≤ 8 fps
Fire Flow Condition	≤ 10 fps
Fire Flow Criteria	
Hydrants in proximity to locations with an ISO-specified NFF	Value per Public Protection Classification (PPCTM) Summary Report
Hydrants in proximity to buildings without ISO-specified NFF (residential)	1,000 gpm
Storage Criteria	
Operational	25% of maximum day demand
Fire	1.68 MG based on 4-hour fire duration with 7,000 gpm fire flow (per ISO maximum reported in PPCTM)
Emergency	10% of maximum day demand
Water Age Criteria	
Water Pockets Older than/with Maximum Retention Time of:	
1 - 95 Hours	Acceptable
96 - 240 Hours	Area of concern

1.5.2 Baseline of Performance for the WTP

The historical finished water quality data was analyzed for the period of 2020 to 2024 (4.5 years) to establish a baseline performance for the WTP. The average monthly data was obtained from the WTP MORs. Table 13 presents a summary of the five-year finished water quality data.

Table 13 Water Quality Baseline of Performance for the WTP

Parameter	Units	Average	Maximum	Minimum
pH	-	8.68	8.88	8.47
P Alkalinity	mg/L $CaCO_3$	2.90	5.25	1.52
M Alkalinity	mg/L $CaCO_3$	44.30	55.86	36.43
Total Hardness	mg/L $CaCO_3$	46.08	60.54	37.57
Calcium Hardness	mg/L $CaCO_3$	36.81	49.96	29.25
Total Chlorine	mg/L	3.75	4.10	3.31
Color	cu	4.81	8.54	1.97
LSI	-	0.23	0.53	-0.05
Turbidity	(NTU)	0.29	0.51	0.20

In addition, the trends of the finished water quality were graphed over the past 4.5-year period. The following figures display the trends in water quality data.

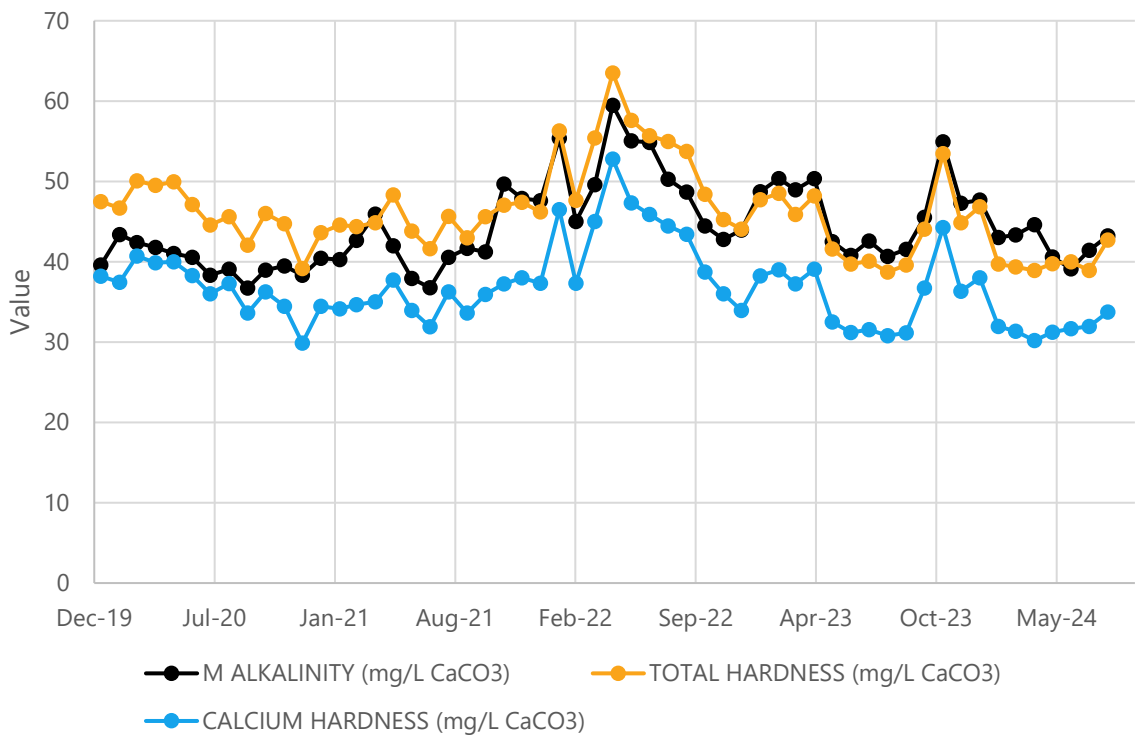

Figure 8 Finished Water Quality Hardness and Alkalinity Trends

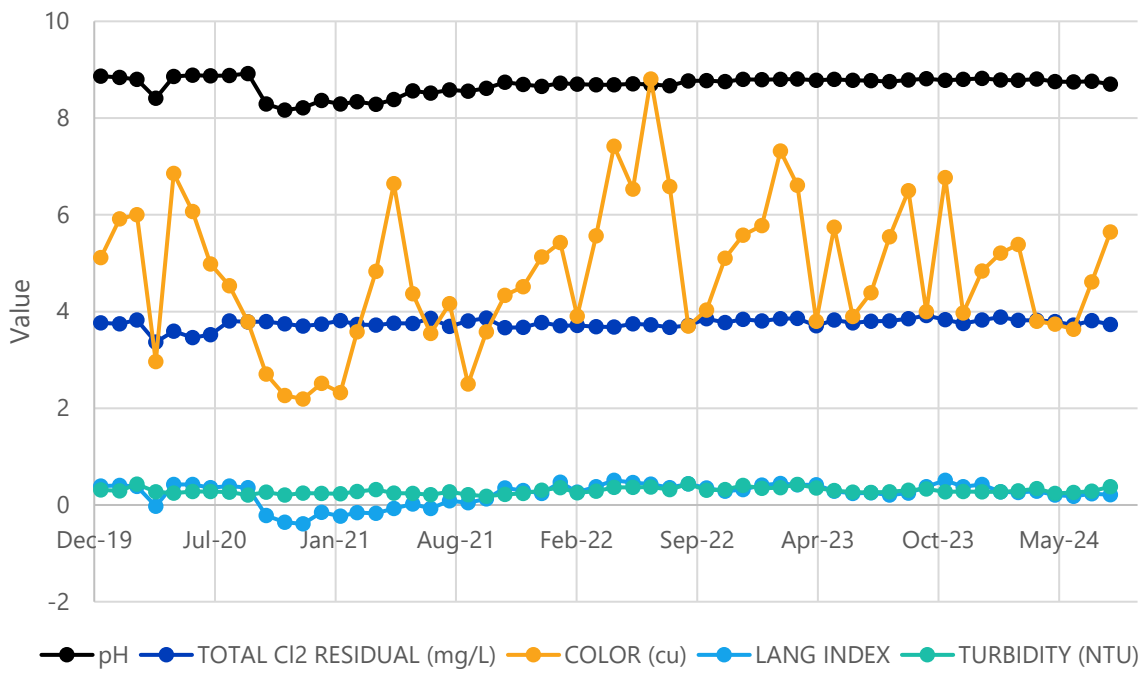

Figure 9 Historical Finished Water Quality for Other Water Quality Parameters

The trends show consistent performance of the water treatment processes. In general, the WTP maintains a hardness of approximately 50-60 milligrams per liter (mg/L), of which most is calcium hardness. The plant also maintains an alkalinity above 40 mg/L, and a pH typically above 8.5. This results in a Langelier Index that is typically slightly positive, which is the optimum range for corrosion control and preventing excessive scaling of distribution piping. The WTP total chlorine residual is consistently near 4.0 mg/L to promote a disinfection residual throughout the distribution system. Finally, the turbidity is consistently well below the 1.0 nephelometric turbidity unity (NTU) maximum limits and the color is consistently below the 10 CPU secondary standard threshold.

1.5.2.1 Optimal Water Quality Parameters for Lead and Copper Rule Compliance

The City of Pompano Beach strives to be 100% compliant with all local, state and federal regulations. As such, facilities operate with public safety at the forefront. The City's public water system designated ranges for optimal water quality are shown in Table 14. The type of corrosion control treatment currently used by the City is Aquadene SK—7641.

Table 14 City's Designated Ranges for Optimal Water Quality

Location	POE and Taps
pH Minimum	7.5
pH Maximum	9.4
Orthophosphate Minimum (mg/L as P)	0.2
Orthophosphate Minimum (mg/L as P)	0.6
Total Alkalinity Minimum (mg/L as $CaCO_3$)	20
Total Alkalinity Maximum (mg/L as $CaCO_3$)	60

1.6 Planning Framework Summary

The planning information, projected population growth data, water demand projections, peaking factors, and performance criteria relevant for developing the hydraulic model and the WMP are presented within this technical memorandum.

Population projections as developed and presented to the South Florida Water Management District for the Consumptive Use Permit Modification in 2022, Planning Department estimates for development through 2030, and BEBR official 2023 and 2024 population reports, were used in the development of the population projections. Because the City's jurisdictional boundary differs from the utility service area, projections were revised to exclude the population outside the service area and include population in Lauderdale-By-The-Sea and Lighthouse Point. Future scenarios include a population that will gradually grow within the service area in accordance with the City's Planning and Zoning Department. Resulting population projections are summarized in Table 1.

Historical finished water production data from the City's MORs and SCADA were evaluated. Daily finished water production from the WTP for the last 10 years was used to calculate annual average water production, historical trends, and peaking factors, including the maximum day and maximum month peaking factor. Diurnal curves to characterize the daily pattern of water consumption by account/land use type were generated from hourly data downloaded from the meter system for certain representative accounts for the months of March and August 2024. A peak hour factor was derived by compounding the diurnal maximums from hourly metered data and the maximum day peaking factor.

The per capita water demand, also known as the level of service (LOS), was calculated for the last five years and compared with the historical trend. The per capita demand continues to decrease slowly over the years. This decline is thought to be associated with water reuse and conservation efforts by the City.

The per capita demand factor and the projected population were used to project water demands for the City's utility service area. Population projections for the 20-year and 40-year planning frameworks were multiplied by the per capita factor of 141 gpcd to obtain projected population-dependent water demands. Large users, which are assumed to be independent of population, were added to the calculated population-dependent water demand to obtain the City's finished water demands through 2065. These resulting demands, as well as maximum month, maximum day, and peak hour demands are summarized in Table 15.

A summary of the immediate (2025) and projected water demands including all future customers for the five-year, 10-year, 20-year, and 40-year planning periods is provided in Table 15

Table 15 Summary of Projected Water Demands

Year	Projected Service Area Population	Annual Average	Annual Average with Large Users	Maximum Month	Maximum Day	Peak Hour
		Peaking Factors				
				1.11	1.35	1.71
		Projected Water Demands (MGD)				
2025	99,836	14.08	15.07	16.72	20.34	25.76
2030 (5-year)	108,090	15.24	17.08	18.96	23.06	29.21
2035 (10-year)	112,152	15.81	17.65	19.60	23.83	30.19
2045 (20-year)	117,430	16.56	18.40	20.42	24.84	31.46
2065 (Build Out)	119,427	16.84	18.68	20.73	25.22	31.94

Performance and design criteria were proposed for the City's water distribution system. Criteria for evaluation of the water distribution system include pipe pressure, velocity, and headloss through pipes, as well as standards for fire flow requirements, water age assessment, and storage capacity. These performance criteria will be used in evaluating current and future scenarios in the hydraulic models and were summarized in Table 12. A water quality baseline was established for use in WTP process assessments that will be further explored in the 2025 WMP. Such a baseline is defined by the range of finished water quality observed over the last five years.

The planning framework established in this technical memorandum will serve as a foundation for the modeling and assessments contained in the upcoming 2025 WMP.

APPENDIX G

LETTER TO SOUTH FLORIDA WATER MANAGEMENT DISTRICT

Utilities Department
Nathaniel J Watson, Interim Utilities Director
City of Pompano Beach
1205 NE 5 Avenue, Pompano Beach, Florida 33060
Phone: 954.545.7044

August 11, 2025

South Florida Water Management District
Water Supply Implementation Unit
Nancy Demonstranti, Lower East Coast Plan Manager
3301 Gun Club Road
West Palm Beach, FL 33406

Dear Ms. Demonstranti:

The City of Pompano Beach (City) has reviewed the South Florida Water Management District (SFWMD) 2018 and 2023-2024 Lower Coast Water Supply Plan Update (LEC Plan Update).

Future planning efforts need to include utilities in the SFWMD that must switch to membrane treatment from lime softening to offset water supply impacts due to the Environmental Protection Agencies' PFAS/PFOS regulation. These projects are not just about water supply; they are about the well-being and sustainability of our community, and we rely on your support. Like other utilities, the SFWMD reduced water allocation when Herbert Hoover Dike was in disrepair. This reduction was to be temporary. The district needs to put planning and construction dollars into the water supply and increase allocations for the growing population. Water supply, after all, is one of the three key missions.

The following identified projects, located within the jurisdiction of the City's Utilities Department, include summaries of projects that the City has committed to and their current status.

Ocean Outfall Program

- The Ocean Outfall Program requires the elimination of the six ocean outfalls in southeastern Florida as the primary means of disposal of treated wastewater effluent by December 31, 2025. In addition, affected wastewater utilities must reuse at least 60 percent of the outfall flows by December 31, 2025. Based on reports submitted to the Florida Department of Environmental Protection (FDEP), Broward County is planning to meet the 60 percent reuse requirement by expanding its public access irrigation in northern Broward and southern Palm

Beach counties, including expanding reuse systems in the cities of Pompano Beach and Coconut Creek. Additional deep injection wells are being installed to serve as a backup disposal option and decrease flows through the ocean outfall.

- In 2014, the Reclaimed Water Distribution Project was completed to supply the Pompano Beach Highlands area with reclaimed water. The City is providing approximately 0.4 mgd of the agreed limit of 1.0 mgd reclaimed water to the area to saving water for Broward County.
    - As of 2024, the pipelines for this Reclaimed Water Distribution Project to supply the Pompano Beach Highlands have been installed and is in service.
- Broward County Water and Wastewater Services is currently installing a new 24-inch influent service line to provide the City's reuse water treatment facility, OASIS, future inflow once the County's ocean outfall line is no longer in service.

Reclaimed Water

The City has expanded the reuse system to serve hundreds of residences since the last plan update and continues to actively expand the reuse distribution system every year.

- SFWMD Cooperative Funding Program Projects:
  As part of the Cooperative Funding Program for Fiscal Years 2013 to 2018 and 2018 to 2022, SFWMD provided funds for the development of alternative water supplies. All projects funded in the LEC planning area during these periods are related to reclaimed water. The projects funded by this program and the Utility in the City's jurisdiction and their corresponding status are the following:

    - *Reclaimed Water Distribution System Expansion.*

      Every year, the City performs construction work, increasing the coverage of the reclaimed water distribution system. A bond will be issued in 2025 with $15 million for reuse expansion efforts vs. $2 million over five years. The City looks forward to continuing its partnership with the SFWMD for funding opportunities.

    - *Reclaimed Water Distribution System Expansion: NE 16th Street to NE 24th Street and NE 23rdAvenue to Intracoastal Waterway (Hillsboro Harbor), Capacity 0.34 mgd.*

      This project is complete and provides reuse water to approximately 500 Pompano Beach water customers in the City.

- *Reclaimed Water System Expansion – NE Pompano and Lighthouse Point Scheduled for fiscal year 2017-2026, Capacity 0.04 mgd.*

  This project was divided into five phases, in which phases 1, 2, 3, and 5 have already been constructed. Phase 4 is under design and projected to be completed in 2026. Currently, the City has a contract with Lighthouse Point to provide reclaimed water to almost 500 customers throughout this system.

- Reclaimed water treatment added capacity.

  - *Pompano WRF 5.00 mgd Expansion Study, project for 2035.*

    This project will require expanding the reuse water treatment facility, new storage tanks, and pump stations. Based on feasibility studies, the plant could be expanded to up to 12.5 mgd by 2035.

- Reclaimed water treatment projects that do not increase overall treatment capacity. However, we have projects to increase storage and system pressure over the expansion of the system.

  - *3.5 mg Reuse Storage Tank with Booster Station, projected for 2027*
  - *3.5 mg Reuse Storage Tank, projected for 2035*

    These projects provide additional reuse storage, a pump station, and a maintenance work area to support the expanding residential reuse service within the City.

  - *Reclaimed Water Plant Expansion, 5 mgd design capacity increase. Projected for 2030.*

<u>Water Supply</u>

Efforts to provide an effective use of the LEC water supply are identified throughout the LEC Plan Update. The following is an effort being implemented by the City:

Alternative Water Supply:

- The City's commitment to developing alternative water supply sources has been demonstrated for decades. The reduction of potable water used for irrigation, water conservation efforts, reuse expansion progress, community outreach programs, and ordinance modifications have all led to a substantial decrease in per-capita

water usage. Overall, the City's efforts have reduced the per-capita usage (level of service standard) from a high of approximately 200 gpcd in the 1990s to an average rate of 141 gpcd for the past five years.

- As of December 2023, Phase I of the C-51 Reservoir Alternative Water Supply Project has been implemented, providing an additional 2.0 mgd capacity. On March 20, 2024, the City received notice from the SFWMD that permit conditions have been met for the C-51 Project, and withdrawals above the prior established permit capacity can begin. The City's SFWMD Water Use Permit Allocation has increased from 18.39 mgd to 19.73 mgd.

- Traditional Water Supply:
  - As per the City's reissued Consumptive Use Permit, the total permitted allocation of groundwater from the Biscayne Aquifer for use in raw water supply is a daily average of 19.73 mgd. The permit has a maximum monthly allocation of approximately 24 mgd.
    - The Eastern Wellfield has a permitted allocation of approximately 7.4 mgd across 15 wells.
    - The Western Wellfield has a permitted allocation of approximately 12.34 mgd across 10 Wells. The C-51 Reservoir Project applies to the Western Wellfield.
    - The City is actively engaged in developing a Wellfield Master Plan that will allow the abandonment of older wells and potential construction of newer wells further away from the saltwater interface. The City's new CIP for FY 2019 through FY 2024 includes the Wellfield Performance and Relocation project. This study incorporated a comprehensive assessment of both wellfields, including evaluations of well production, specific capacity, and mechanical upgrades. The plan reviewed existing well rehabilitation, potential relocation, and well replacements.
  - Due to the advent of the National Primary Drinking Water Regulation (NPDWR) for six PFAS compounds, it is expected that the ratio of raw water to finished water will change in the future, yielding the need for increased raw water supply.
    - To address this regulation and its repercussion on water supply, the City has performed a Water Facilities Plan: Emerging Contaminants Water Treatment Plan Upgrades (McCafferty Brinson, 2024) study to pilot test and conceptualize the technology, the potential capital investment, and the raw water demand needs. Subsequently, the City commissioned the preliminary design of the facilities. A Preliminary Design Report for the Water Treatment Plan Upgrades, 90% Submittal (McCafferty Brinson, June 2025) expects a higher ratio of raw water to finished water to address NPDWR.
    - This project has been included in the City's CIP as of 2025.

- Based on the current wellfield, the City's raw water supplies, the WUP as related to AWS, and the need for the Water Treatment Plant Upgrades project to address NPDWR, it is projected that the City may only have sufficient water supplies to meet its anticipated service needs in the short term.
  - By 2030, the City's total raw water demand is calculated as 20.83 mgd, whereas the permitted withdrawal base condition amounts to 18.39 mgd (without the 2.0 mgd of C-51 credits), for a maximum deficit of 2.44 mgd.
  - By 2045, the City's total raw water demand is projected to be 22.44 mgd, at which point the current WUP would allow the use of 20.39 mgd. There would still be a calculated deficit of about 2.0 mgd.
- The City has commissioned a Groundwater Modeling Study to support the pursuit of additional water allocation, and continues its vast and successful efforts to secure AWS.

Water Treatment

- As mentioned in the section above, the City is taking proactive measures to add treatment processes and capacity to meet the new NPDWR standards within the required timeframe.
  - The City's 2024 Water Facilities Plan: COPB Emerging Contaminants Water Treatment Plant Upgrades report recommended a phased approach to meet both short- and long-term water demands and compliance with PFAS regulations.
  - The City has completed research to determine that the best course of action is nanofiltration technology for the removal of PFAS chemicals and has commissioned the design of the facility. The City describes the project as follows:
    - "The purpose of this project is to provide compliance with the National Primary Drinking Water Regulation (NPDWR) for per- and polyfluoroalkyl substances (PFAS) that was released by the United States Environmental Protection Agency (USEPA) on April 10, 2024. In general, the project consists of the expansion of the City's existing 10 million gallon per day (mgd) capacity nanofiltration (NF) process to 30 mgd to meet the City's projected buildout maximum day demands (MDD), and decommissioning of the City's existing lime softening process (to be performed under a separate phase of this program). The expansion of the NF process will include yard piping modifications, a raw water booster pump station, a sand strainer system, the addition of new cartridge filters, replacement of membrane units, replacement of membrane cleaning system, addition of degasifiers, post-treatment for disinfection and stabilization, and necessary electrical and control upgrades to operate the above-described treatment systems".

- In the 2018 LEC Plan Update, the City of Pompano Beach reported plans to investigate mechanisms to improve the efficiency of its nanofiltration WTP by adding a concentrate recovery system that will yield 0.6 mgd of water. The results of the investigation did not yield cost-effective mechanisms; therefore, this plan persisted only through the investigation stage.

Water Conservation

Water conservation efforts are identified throughout the 2023-2024 LEC Plan Update for all planning areas to reduce the future amount of water supply needed to meet water demands. The conservation-related actions identified in the 2023-2024 LEC Plan Update and the efforts being implemented by the City are the following:

- *"The SFWMD should continue to implement its Comprehensive Water Conservation Program and its Cooperative Funding Program."* (2023-2024 LEC Work Plan Update)

  The initiatives and actions being implemented by the City are in accordance with the 2008 District's Comprehensive Water Conservation Program. The City continues to seek supplemental sources of revenue to expand the reuse system and provide alternative water supply.

- "*PS utilities are encouraged to develop goal-based water conservation plans and proactively implement water-saving measures and programs."* (2023-2024 LEC Work Plan Update)

  The city has conservation goals of increasing reuse by 5% per year and saving 30 MG water per year.

  The City promotes water conservation through various ways:
  (1) the OASIS reuse water connection program for single-family residents called the ICanWater program;
  (2) distribution of plumbing retrofits and informing the public on water conservation through public events and homeowners associations meetings;
  (3) providing tips and answers to FAQs on the City's Water Conservation website (https://www.pompanobeachfl.gov/residents/utilities/water-conservation);
  (4) through the Broward County Mobile Irrigation program, which helps large users of drinking water, such as condominiums, save water and money by increasing the performance of their irrigation system and making it more efficient. This program is free of charge and voluntary for these large water users; and
  (5) through Residential Irrigation Rebates in which the City, in partnership with Broward County, offers rebates for the installation of EPA

WaterSense-labeled smart irrigation controllers and pressure-regulating spray bodies.

In addition, the City has assigned funds in the Five-Year Capital Improvement Plan for Fiscal Years 2024 – 2028 ($100,000/year) to the Utility Renewal and Replacement Capital Fund. This fund serves to conserve potable water resources through the proactive implementation of a Water Conservation Program. The City will revise the Code of Ordinances as required to include any updates to this Water Conservation Program.

- *"Local governments should evaluate whether mandated water conservation measures, such as requirements for construction of water-efficient homes and commercial properties, are appropriate for their jurisdiction."* (2023-2024 LEC Work Plan Update)

  Under § 157.127(C)(2) of the Pompano Beach Code of Ordinances, new installations of automatic irrigation systems shall be equipped with a water-sensing assembly that will automatically discontinue irrigation during periods of rainfall (City Ordinance 50.05). The City has also implemented programs such as offering free plumbing retrofits, Mobile Irrigation Lab, and Residential Irrigation Rebates.

- *"Local governments should adopt a year-round irrigation ordinance that fully comports with the SFWMD's Mandatory Year-Round Landscape Irrigation Conservation Measures Rule (Chapter 40E-24, Florida Administrative Code). Although 71 of the 116 local governments have adopted acceptable ordinances, 45 in the LEC Planning area have not yet adopted irrigation ordinances.* (2023-2024 LEC Work Plan Update)

  The City has adopted Year-Round Water Restrictions to comply with the SFWMD's Mandatory Year-Round Landscape Irrigation Conservation Measures Rule (Chapter 40E-24, Florida Administrative Code). These restrictions include the following: users must follow the current two-day-week year-round landscape irrigation restrictions to protect water resources; and irrigation is not allowed between the daily hours of 10:00 am to 4:00 pm (City Ordinance 50.05).

- *"Local governments should consider developing or enhancing ordinances regarding Florida-Friendly Landscaping Program principles [Section 373.185, Florida Statutes]."* (2023-2024 LEC Work Plan Update)

  The City encourages the planting of "Florida Friendly" plants and supports "Florida Friendly Best Management Practices for Protection of Water Resources by Green Industries, 2008" (City Ordinance 155.52).

- *Public Education programs can help instill a year-round conservation ethic. Local and tribal government and PS Utilities are encouraged to provide conservation-*

related information, messaging, and educational programs in cooperation with the SFWMD. (2023-2024 LEC Work Plan Update)

The City has continuously implemented local public education programs to encourage water conservation. The City also participates in Broward County's water conservation programs, such as "Mobile irrigation," "Water Matters," and "Know the Flow."

The City embraces conservation efforts by employing a full time Utilities Reuse Outreach and Conservation Coordinator. We conduct direct outreach and advertise conservation continually on our City's local cable channel.

- *All eligible water users are encouraged to seek cost-share funding opportunities that may be available for water conservation projects.* (2023-2024 LEC Work Plan Update)

  The City regularly applies for alternative water supply (AWS) funding. We appreciate the District's recognition of past efforts for AWS grants. The City has implemented local public education programs and participated in Broward County water conservation outreach programs. The City also encourages the planting of "Florida Friendly" plants and supports "Florida Friendly Best Management Practices for Protection of Water Resources by Green Industries, 2008."

- *"Water users are encouraged to use advanced irrigation technology, improve landscape design and best management practices, and participate in user recognition programs (e.g. Florida-Friendly Landscaping program) to further increase landscape water use efficiency."* (2023-2024 LEC Work Plan Update)

  The City encourages improved landscape design standards and employs a full-time City Arborist to ensure that new development is compliant with the adopted codes.

- *"Commercial/Industrial/Institutional (CII) entities are encouraged to use the <u>Water Efficiency and Self-Conducted Water audits at Commercial and Institutional Facilities, a Guide for Facility Managers</u> (SFWMD 2013) to improve water use efficiency and reduce operating costs."* (2023-2024 LEC Work Plan Update

  The City encourages the implementation of EPA WaterSense guidelines including industrial, commercial, and institutional entities. Self-conducted water audits are encouraged.

- *Smart Meter Technology*

  The City provides smart meters for all water and reuse water services that allow customers to receive alerts and review historic usage.

The Water Supply Facilities Work Plan will be adopted and incorporated into the applicable elements of the City's Comprehensive Plan. We hope the District finds the information included in this letter useful. The City of Pompano Beach continues to plan for and support future water supply and management alternatives for the City.

Sincerely,

Nathaniel J Watson

Interim Utilities Director

cc: Phil Hyer, Utilities Treatment Plant Superintendent
Lawrence Teich, Utilities Compliance and Efficiency Manager
A. Randolph Brown (Retired – former Utilities Director)

APPENDIX H

POTABLE WATER ELEMENT COMPONENT PROPOSED MODIFICATIONS

07. POTABLE WATER SUB-ELEMENT

Plan It! Pompano

Purpose and Direction: The purpose of the Water Sub-Element is to set the policy direction to enable delivery of potable water services that are efficient, affordable and reliable even during a time of increasing threat to fresh water supplies due to sea level rise and the salt water intrusion that is part of the inevitable impacts of climate change.

The goal of this element is to protect our fresh water supply and maintain water treatment and distribution systems designed and maintained at the highest level to be durable, resilient, and sustainable to serve future generations to the maximum extent feasible and cost effective.

Goals, Objectives, and Policies

Goal 7A: Provide safe, reliable, sustainable, cost effective potable water to all residents and businesses within the City's water utility service areas and make the capital improvements necessary to maintain or improve potable water services.

Objective 07A.01.00 – Health & Safety

The City shall ensure the provision of a safe and reliable supply of potable water to customers in its service area and the entire City through regulatory compliance and best operating and management practices.

Policy 07A.01.01
Deliver safe and reliable potable water to residents and businesses in the City of Pompano Beach and to residential outside of Pompano Beach but within the City's utility service area.

Policy 07A.01.02
Maintain a conservation rate structure for potable water that provides a minimum level of usage at a cost effective rate.

Policy 07A.01.03
Provide sufficient water to meet system designed fire flows while maintaining required system pressure.

Policy 07A.01.04
Comply with all potable water standards and reporting requirements.

Policy 07A.01.05
Potable water service providers should explicitly notify customers of supply interruptions as soon as possible.

Policy 07A.01.06
Minimize the interruption of potable water service to customers and conserve water by responding quickly to breaks in water mains.

Policy 07A.01.07
Follow industry standards in disinfecting water mains in order to maintain optimum chlorine residual levels.

Policy 07A.01.08
The City of Pompano Beach shall review all proposed land use plan map amendments within the City limits for adequacy of water supplies.

Objective 07A.02.00 – Level of Service

The City of Pompano Beach shall maintain the level of service (LOS) standard ~~of 161~~at 141 or less gallons per capita per day (gpcd); the BCWWS District 1 LOS is 112 gpcpd and the BCWWS District 2 LOS is 96 gpcpd.

Policy 07A.02.01
Capital improvement projects undertaken to maintain the established level of service standard shall be included in the Capital Improvement Element of the Comprehensive Plan and implemented through the 5-Year Capital Improvements Plan (CIP) which is updated annually. The 5-year CIP shall reference BCWWS water supply facility improvements being implemented by BCWWS if those improvements impact the City.

Policy 07A.02.02
The projected levels of service shall be the minimum levels of service maintained during the ten (10) year review period of the Consumptive Use Permit and ten (10) year Water Supply Facilities Work Plan planning periods during the planning horizon covered by this Comprehensive Plan which is through 2040.

Policy 07A.02.03
The City shall evaluate the level of services standards every five years in order to determine continued applicability.

Policy 07A.02.04
The design capacities and current (~~2019~~2025) demands for the Pompano Beach Water Facility and the Broward County Water Facilities 1A and 2A are as follows:

Pompano Beach Water Treatment Capacity

Lime Softening Plant:	40.00 million gallons per day in Design Capacity, to be decommissioned.
Membrane Plant:	10.00 million gallons per day, ~~demand in 2019~~ to be expanded to 30.00.
~~Total:~~	~~50.00 million gallons per day in Design Capacity~~
	~~15.41~~15.07 million gallons per day in ~~2019~~ 2025 demand

Broward County Water Treatment Capacity

2A Plant	40.00 million gallons per day in Design Capacity 12.9 million gallons per day in 2019 demand 112 gpcpd generation rate 2019)
1A Plant	16.0 million gallons per day in Design Capacity 7.45 million gallons per day in 2019 demand 96 pgcpd generation rate (2019)

Policy 07A.02.05
Evaluate the need to update the Water Master Plan every five years.

Policy 07A.02.06
Review the decennial U.S. Census data and compare to the City's projected population projections to determine if any adjustments in population expectations are necessary.

Policy 07A.02.07
Prior to site plan approval, the anticipated water demand for a project will be determined to ensure that adequate water supply will be available to serve the new development.

Objective 07A.03.00 – Coordination with Other Entities

The City shall, through the use of Interlocal Agreements, provide potable water service to customers in Lighthouse Point and Lauderdale by the Sea; will work with Broward County Utilities which serves customers inside the City limits; and will maintain interconnections to these potable water systems.

Policy 07A.03.01
Continue to provide safe and reliable potable water services to the City of Lighthouse Point service area in accordance with the adopted Interlocal Agreement.

Policy 07A.03.02
Maintain an Interlocal Agreement or memorandum of understanding with the Town of Lauderdale by the Sea for the continued provision of safe and reliable potable water services.

Policy 07A.03.03
Maintain agreements for the delivery of safe and reliable potable water to City of Pompano Beach residents which are served by Broward County Water & Wastewater Services.

Policy 07A.03.04
Monitor development near the Town of Hillsboro Beach wellfield (925 NE 36th Street), which is located within the City of Pompano Beach city limits, to assist them in protecting their water supply.

Policy 07A.03.05
Maintain agreements or memoranda of understanding which provide for various interconnections with other potable water entities which operate their own potable water systems which include and may not be limited to in the future: Coconut Creek, Deerfield Beach, Fort Lauderdale, North Lauderdale and Broward County.

Policy 07A.03.06
Share information concerning ongoing water supply needs, especially through the 10-year Water Supply Facilities Work Plan process, with City of Lighthouse Point, Town of Lauderdale by the Sea, and Broward County.

Policy 07A.03.07
Coordinate with the City of Lighthouse Point and Broward County on the implementation of alternative water supply projects (primarily water reuse), establishment of level of service standards and resource allocations.

Objective 07A.04.00 – Capital Improvements

Taking into account recent technology advances and regulatory requirements, the City shall review and revise priorities for the replacement of facilities, correction of any existing water supply and facility deficiencies and provisions for future water supply and facility needs, as developed in the Water Master Plan, for inclusion in the City's 5 year Capital Improvement Plan and Capital Improvements Element.

Policy 07A.04.01
The construction of capital improvements will be prioritized based upon periodic review of the Water Supply, Treatment and Reuse Master Plans, accounting for changes in recent technology advances and regulatory requirements.

Policy 07A.04.02
Where potable water infrastructure improvements are required concurrent with private development, it shall be the responsibility of the developer to provide these systems (except in unique State or Federal grant situation).

Policy 07A.04.03
Whenever possible, the City shall attempt to supplement potable water improvements with funding from additional revenue sources including the issuance of City revenue bonds.

Policy 07A.04.04
Prepare Master Plans for system improvements and submit recommended improvements for the first five years in the City of Pompano Beach Capital Improvement Plan. Water system improvements shall include improvements to the Water Treatment Plants, the Water Reuse Plant, the reuse distribution system, the potable water distribution system and/or the wellfields

Policy 07A.04.05
The Utility Department will update the Water and Reuse Master Plans every 5 years.

Policy 07A.04.06
Upgrade water mains and service lines, as suggested in the Water Master Plan, at strategic locations to meet current and future demand as well as maximize water quality, sustainability and maintain fire flows.

Policy 07A.04.07
To minimize the interruption of potable water service to customers due to breaks in water mains, the City's Capital Improvement Plan will follow recommendations in the Water Master Plan which addresses water line replacement at an economically feasible rate.

Policy 07A.04.08
To minimize rate increases for customers, the City's Capital Improvement Plan will follow the recommendations of the Water Master Plan, 10-Year Water Supply Facilities Work Plan, Asset Management Program and staff considerations which address the replacement of capital equipment near the end of the equipment's life

expectancy.

Policy 07A.04.09
Rates for potable water usage shall include adequate funding for capital improvements and regulatory requirements.

Policy 07A.04.10
Where new potable water service is required, it shall be the responsibility of the developer to adhere to the City's maximum allowable water usage factors for the various establishments, which is as it appears in Boward County's Guideline for Determining Ability to Provide Potable Water and Wastewater Service (BCWWS, April 2012) – Section "Potable Water", Subsection "Average Day Demand". ~~approved Concurrency Design Table, which states the maximum allowable water usage factors for various establishments.~~

Objective 07A.05.00 – Water Reuse

The existing water reuse facility will reduce consumption of potable water supplies for non-potable water purposes, thereby conserving limited supplies of potable water.

Policy 07A.05.01
Water reuse practices in the aquifer recharge areas will assist in the replenishment of the aquifer and slow the westward flow of the saltwater intrusion line.

Policy 07A.05.02
Continue to provide reuse water at a lower rate than the potable water rate.

Policy 07A.05.03
Continue to invest a minimum of $~~400,000~~425,000 per year in the construction of reuse distribution lines for the Reuse Water plant to enable residents, businesses and city properties to utilize reuse water for outdoor irrigation.

Policy 07A.05.04
Update the Water Reuse Master Plan every five years.

Policy 07A.05.05
Seek available grants (federal, state and local) for the expansion of the reuse water distribution system.

Policy 07A.05.06
To decrease potable water usage for irrigation and reduce treated wastewater disposal demand, newly constructed single-family developments are required to construct reclaimed water distribution mains and are required to connect to the system when reclaimed water service becomes available. Connection to the system is currently voluntary for existing single-family properties and mandatory for multi-family and commercial within the City; however, a monthly availability charge is assessed where reclaimed water service becomes available. Connection is mandatory for all types of properties within the Lighthouse Point serviced area.~~consider enacting a mandatory reuse connection for all residential properties like the one that exists for multifamily, commercial and Lighthouse Point customers.~~

Policy 07A.05.07
Install reuse distribution lines at a rate to meet the needs identified in the Lower East Coast Water Supply

Facilities Work Plan for ~~2040~~2045.

Policy 07A.05.08
Upgrade the Water Reuse Facility to include advanced treatment in order to meet future water quality regulatory requirements.

Objective 07A.06.00 – Other Alternative Water Supply Sources

The City shall pursue alternative sources of raw water supply/treatment such as utilization of the Floridian Aquifer through reverse osmosis and to supplement the existing water reuse system.

Policy 07A.06.01
The City shall pursue alternative water supply sources as recommended in the Water Master Plan based on need.

Policy 07A.06.02
Develop alternative water supplies, such as reuse, Floridan Aquifer wells, or buying C-51 reservoir capacity, to satisfy projected water demands which cannot be directly met through increased allocations in the Consumptive Use Permit.

Policy 07A.06.03
Develop partnerships with other utilities, in order to minimize cost increases of investigating other alternative water supplies such as the use of reuse water, stormwater reservoirs and stormwater recharge.

Policy 07A.06.04
Consider further participation in the ~~Participate in the~~ C-51 Reservoir Alternative Water Supply (AWS) Project by exploring its Phase II~~Phase 1 by whatever means appropriate and approved by the City Commission~~.

Objective 07A.07.00 – Conservation

Conserve potable water resources through a proactive water conservation program.

Policy 07A.07.01
Maintain the existing water surcharge fee which is levied during times of water shortages.

Policy 07A.07.02
Current and future raw water withdrawals shall comply with the requirements of the SFWMD consumptive use permit

Policy 07A.07.03
For all new building permits, water conserving fixtures shall be required.

Policy 07A.07.04
Encourage the planting of “Florida Friendly” plants and support “Florida Friendly Best Management Practices for Protection of Water Resources by Green Industries, ~~2015~~2020”.

Policy 07A.07.05
Continue the public education program to encourage water conservation and to provide technology upgrades, like the free Dropcountr App, to provide the most recent tools for water use monitoring and conservation.

Policy 07A.07.06
Maintain leak prevention and detection program such that unaccounted water loss is maintained at less than 10%.

Policy 07A.07.07

Continue to implement a formal water conservation program as required by the Consumptive Use Permit.

Policy 07A.07.08
Revise the Code of Ordinances to include updates to the water conservation program

Policy 07A.07.09
Participate in Broward County's water conservation programs, such as the "Mobile Irrigation", "Know the Flow" and "Water Matters".

Policy 07A.07.10
Comply with Broward County's year round irrigation rule as referenced in the City of Pompano Beach 10 year Water Supply Facilities Work Plan.

Objective 07A.08.00 – Aquifer Resource and Protection

The City shall operate the potable water system and water reuse system in a manner that treats the Biscayne Aquifer as a renewable resource and protects it from depletion.

Policy 07A.08.01
The City shall adhere to the restrictions of the Wellfield Protection Ordinance.

Policy 07A.08.02
Pursue a modification of the ~~The City shall adhere to the restrictions of the~~ Consumptive Use Permit to address limitations that may restrict the City's ability to comply with the PFAS National Primary Drinking Water Regulation by 2030.

Policy 07A.08.03
Protect the integrity of the two wellfields by designating wellfield sites with a suitable land use designation which restricts inappropriate development.

Policy 07A.08.04
Protect the integrity of the two wellfields by City ownership of the wellfield sites or restrictive easements on the wellfield sites and water lines from the wells.

Policy 07A.08.05
Continue to monitor saltwater intrusion so that timely action can be taken to protect the eastern wells to the maximum extent possible and to determine when they must be removed from use.

Policy 07A.08.06
Follow recommended practices and make improvements to the wells in the eastern and western wellfields as recommended in the Water Master Plan as necessary to maintain capacity and water quality. Lock in and protect the eight future western well sites in Palm Aire.

Policy 07A.08.07
Review all land use plan map and text amendments, rezonings and site plan applications to ensure that there is sufficient potable water resources available to serve the proposed development and the land uses are consistent with the wellfield protection zone regulations.

Objective 07A.09.00 – Maintenance Procedures

Follow recommended utility maintenance industry standards and construct required improvements to assure proper operating capabilities as recommended in the Water Master Plan.

Policy 07A.09.01
Maintain the water treatment plant facility and equipment such that the facility meets all regulatory requirements

and that said equipment and facility are maintained and improved as needed.

Policy 07A.09.02
A proper preventative maintenance program effectively requires 80-80% of maintenance time, while emergency maintenance occupies only 10- 20% of all maintenance hours (AWWA Manual 5).

Policy 07A.09.03
Plant chemicals are handled according to OSHA and SDS sheets to ensure all safety requirements are met in order to prevent accidents resulting in injury, loss of life, disruption of service or costs due to environmental remediation or liability.

Policy 07A.09.04
Ensure the preventative maintenance program for wells meets sanitary survey requirements.

Policy 07A.09.05
Maintain a leak prevention and detection program such that unaccounted water loss is maintained at less than 10%.

Policy 07A.09.06
Maintain an active Emergency Response Plan to prevent loss of human life, damage to property and to provide for continuation of service in the event of natural or man-made disaster.

Policy 07A.09.07
Maintain current interconnects with other Utilities to provide water in an emergency, and upgrade interconnects to meet backflow prevention requirements.

Policy 07A.09.08
Maintain mutual aid agreements with organizations such as FLAWARN in order to mitigate disasters.

Policy 07A.09.09
The water treatment facility, water reuse facility and distribution system shall maintain 100% compliance with all regulations.

Objective 07A.10.00 – Regulatory Matters

Comply with all water quality, operations and reporting regulations.

Policy 07A.10.01
Plant inspection results should average a 90% rating or better.

Policy 07A.10.02
Protect wells such that water quality meets all regulatory requirements.

Policy 07A.10.03
Maintain an effective distribution system per the American Water Works Association (AWWA) standards such that water quality within the distribution system meets regulatory requirements and water delivery meets demand.

Policy 07A.10.04
Meet regulatory requirements as well as AWWA standards for flushing, backflow prevention, valve exercising and cross connection control.

Policy 07A.10.05
To ensure coordination of the Comprehensive Plan with the Lower East Coast Water Supply Plan (LECWSP) Updates, continue to adopt the necessary updates to the Water Supply Facilities Work Plan (Work Plan) within 18 months of any adopted update to the LEC. As of October ~~2020~~2025, the City hereby adopts by reference the ~~2020~~ 2025 Water Supply Facilities Work Plan (available at the following link: Pompanobeachfl.gov/compmap/~~WaterSupplyPlan2020~~WaterSupplyPlan2025), which covers a planning

period of not less than 10-years and addresses issues that pertain to water supply facilities and requirements needed to serve current and future development within the City. The City shall review the plan every 5-years within 18 months after the governing board of the SFWMD approves an updates to the LECWSP. Any changes affecting the Work Plan shall be included in the Capital Improvements Plan to ensure consistency between the Potable Water Sub-Element and the Capital Improvements Element.

Policy 07A.10.06
The City's Building Inspection Division will perform residential reuse inspections and the City's Utilities Department will perform annual signage inspections required by the Florida Department of Environmental Protection permit, the Broward County permit, and the City's Reuse Manual.

Goal 7B: Incorporate the best available data and science, into policy and planning decisions for infrastructure, recognizing the impacts associated with long range climate change predictions.

Objective 07B.01.00 – Southeast Florida Regional Climate Change Compact

The City shall be an active member of the Southeast Florida Climate Change Compact and will follow the policy direction provided by the Compact.

Policy 07B.01.01
The City shall adopt the Southeast Florida Regional Climate Change Compact sea level rise projections, which are anticipated to be updated at least every 5-years, as the basis for sea level rise planning and adaptation initiatives.

Objective 07B.02.00 – Ensure Resiliency

The City shall take actions to maximize the resiliency of existing and future water resources, and water and wastewater infrastructure, from the predicted impacts of climate change which include sea level rise related salt water intrusion and associated fresh water shortages as well as flood damages from increased rain and flooding from rain and storm surge caused by increased hurricane size and intensity.

Policy 07B.02.01
Identify public water infrastructure at risk from sea level rise and other climate change related impacts and provide periodic updated assessments no later than every five years in the Water, Reuse and Wastewater Master Plan.

Policy 07B.02.02
Provide for increased assessments needed for projected water and wastewater management as changing land use patterns occur under the potential impacts of climate change.

Policy 07B.02.03
Protect existing well fields, surface storage facilities, control structures, water and reuse treatment plants and transmission infrastructure from increased coastal flooding, sea level rise, saltwater intrusion, and other potential climate change impacts, and plan for infrastructure replacement and relocation as needed.

Policy 07B.02.04
Continue to enforce mandatory reuse connection for commercial and multifamily properties, and for newly constructed multi-family property irrigation, when reuse water is available.

Policy 07B.02.05
Continue to support a comprehensive saltwater intrusion monitoring program, together with the South Florida Water Management District and the United States Geological Survey that provides measurable movement of the saltwater intrusion line.

Policy 07B.02.06
Improve resilience against salt water intrusion, and other related impacts of climate change and sea level rise through the Comprehensive Plan related Elements, the Ten Year Water Supply Facility Work Plan, and the Water and Reuse Master Plans.

Policy 07B.02.07
Complete securing of future sited wellfield locations in Palm Aire to ensure sustainability of water supply.

Objective 07B.03.00 – Intergovernmental Coordination

The City shall create and maintain effective intergovernmental coordination and ongoing communication that supports sustainable water supplies and resource protection while maintaining climate change preparedness.

Policy 07B.03.01
Collaborate with local, regional, state and federal partner agencies on developing the scientific, technical knowledge and integrated modeling efforts and continuous data collection needed to understand the potential impacts of climate change on the region's water resources.

APPENDIX I

CONSERVATION ELEMENT COMPONENT PROPOSED MODIFICATIONS

10. CONSERVATION ELEMENT

Plan It! Pompano

Purpose and Direction: The Conservation Element goals, objectives and policies are centered around water quality, quantity and conservation; air quality; and the protection of natural resources found within the City.

The policies support climate change adaptation by ensuring the beach and dune system, which provide a natural barrier to storm surge and the impacts of sea level rise, are maintained and enhanced whenever possible; water withdrawal from the Biscayne Aquifer is effectively managed and the reuse water irrigation system is expanded to hold back the saltwater intrusion line as sea levels rise.

Goals, Objectives, and Policies

Goal 10: To protect, enhance and effectively manage the natural resources of the City in order to achieve a high environmental quality including factors that affect carbon attenuation and energy conservation.

Objective 10.01.00 – Air Quality

The City shall put forth an effort to ensure compliance with the minimum air quality standards established by the Florida Department of Environmental Protection and the Broward County Environmental Protection and Growth Management Division including factors that affect energy conservation.

Policy 10.01.01
The City shall coordinate efforts to preserve air quality with Broward County Environmental Protection and Growth Management Division and will review all proposed development with respect to potential impacts on regional air quality with negative impacts eliminated or effectively mitigated.

Policy 10.01.02
The City shall continue developing their Climate Change Mitigation and Adaptation Program that supports mitigation and sensitivity to the impacts of climate change in coordination with other municipalities, Broward County, private businesses, other governmental agencies and the State of Florida. This program will focus on mitigating the causes and consequences of greenhouse gas emissions in a cost-effective and efficient manner that preserves the City's overall values and quality of life.

Objective 10.02.00 – Surface Water Quality

The City shall continue to undertake the following actions to assure surface water quality including impacts on the ocean are minimized and all conditions of the City's National Pollution Discharge Elimination System (NPDES) permit are met.

Policy 10.02.01
Enforce the City regulations that require new development retain the first flush of storm water before it enters surface water bodies, minimize the direct discharge of stormwater runoff into such water bodies and enforce the City regulations that provide for the protection and creation of surface waters in conformance with policies and "best management practices" of the State and the South Florida Water Management District.

Policy 10.02.02
No discharge of wastewater or secondary treated effluent shall be made into the ocean after 2025 to comply with the Ocean Outfall Legislation~~The City shall encourage the appropriate agencies to monitor wastewater discharged into the ocean to assure compliance with secondary wastewater standards and ensure all ocean outfalls are terminated by the 2025 deadline~~.

Policy 10.02.03
The City shall report all prohibited discharges of untreated wastewater into canals and the Intracoastal Waterway to Broward County and/ or the South Florida Water Management District.

Policy 10.02.04
The City shall encourage the planting of acceptable vegetation along waterways to provide cleansing action.

Policy 10.02.05
Broward County requires all marinas to have pump-out facilities and to obtain a permit for such operation. Discharge from boats into the surface water is prohibited.

Policy 10.02.06
The City and other regulatory agencies shall require the use of proper turbidity control measures during any major operation (e.g. beach re-nourishment) in the vicinity of the coral reef and the responsible permitting agency shall monitor the measures.

Policy 10.02.07
The City shall coordinate with Broward County in the environmentally sensitive management of aquatic weeds.

Policy 10.02.08
The City shall conduct canal dredging in an environmentally sound manner.

Policy 10.02.09
The City shall encourage the rapid cleanup of any off-shore oil spill; this is the responsibility of County and Federal agencies.

Policy 10.02.10
The City shall conform to the flood management plans of the County, South Florida Water Management District and local drainage districts in order to maintain adequate flood carrying and storage capacities.

Policy 10.02.11
The City shall encourage the use of on-site lakes to meet irrigational water needs.

Policy 10.02.12
The City shall preserve and manage wetlands in compliance with the County, State and Federal regulations.

Policy 10.02.13
The City shall continue to maintain Chapter 53 of the Land Development Regulations to ensure consistency with Broward County Code of Ordinances which establish stormwater quality standards.

Objective 10.03.00 – Ground Water Quality

The quality and quantity of the City's groundwater resources shall be maintained and, where possible, enhanced.

Policy 10.03.01
The City shall make certain that all development within a production "wellfield cone of influence" complies with the County Wellfield Ordinance.

Policy 10.03.02
The eastern and western wellfield production quantity and quality shall be monitored for the protection of the groundwater supply per SFWMD's Consumptive Use Permit Special Conditions.

Policy 10.03.03
City policies shall promote water conservation and, wherever possible, promote and continue the use of re-use water for irrigation by whatever means are appropriate and approved by City Commission.

Policy 10.03.04
The City shall keep the emergency water conservation plan current including the conservation measures and how it will be implemented.

Policy 10.03.05
The City shall make certain that all unused wells are capped (per County and SFWMD regulations) to avoid pollution.

Policy 10.03.06
The City shall continue to participate in Alternative Water Supply projects included in the 10-Year Water Supply Plan such as reuse, the potential Phase II of the C-51 Reservoir, ~~concentrate recovery~~ and other potential AWS projects.

Policy 10.03.07
The City shall, within its jurisdiction, enforce the graduated detailed and specific water reductions set forth by the South Florida Water Management District during times of water shortage as well as the established year-round water-use restrictions.

Policy 10.03.08
The City shall continue its water reuse program to combat saltwater intrusion and extend water resources.

Policy 10.03.09
Protect and conserve the water resources of the Biscayne Aquifer by reducing the per capita demand for potable water and developing alternative water supplies, primarily reuse water.

Policy 10.03.10
The City will continue to update the 10-Year Water Supply Facilities Work Plan within 18 months of adoption of any update to the Lower East Coast Water Supply Facilities Work Plan by the SFWMD.

Policy 10.03.11
Any remaining wetlands that may be found in the City will be appropriately preserved and protected to preserve their aquifer recharge functions.

Objective 10.04.00 – Soil Erosion

The City shall enforce the adopted soil erosion controls including those consistent with Chapter 27 of the Broward County Code.

Policy 10.04.01
All new development permits will comply with City regulations requiring shoreline and slope stabilization during and after all development activity, including vegetative stabilization after development.

Policy 10.04.02
The City shall work with the U.S. Soil Conservation Service in their soil erosion control program.

Policy 10.04.03
All mining and quarrying activities in Pompano Beach shall comply with the permit requirements of the Broward County Department of Environmental Protection.

Objective 10.05.00 – Native Plant & Wildlife Protection

Ecological communities identified by Broward County and the City as known to contain plant species listed in the Regulated Plant Index for protection by the Florida Department of Agriculture and Consumer Services shall be managed, protected and conserved, as appropriate.

Policy 10.05.01
In reviewing development applications or park proposals, efforts will be made to preserve native vegetative communities.

Policy 10.05.02

City policies and ordinances will support Broward County's efforts:

a. The sea turtle head start program, including beach lighting controls, and
b. The Florida Manatee protection program, including concerted winter enforcement of boat speed regulations.
c. Protect and conserve those areas known to be reproduction, nesting and feeding areas for animals listed as endangered or threatened species or species of special concern which are in locations appropriate and safe for wildlife.

Policy 10.05.03
In the case of new development, enforce city regulations which require the berming of viable remaining Cypress stands to ensure the viability of their ecosystems.

Objective 10.06.00 – Natural Habitats

The City shall use a combination of public education, land acquisition and ordinances to achieve protection or mitigation of the remaining natural habitats.

Policy 10.06.01
In accordance with the City landscape ordinance continue to encourage the planting of native vegetation coupled with the removal of exotic vegetation as a part of the site plan review process.

Policy 10.06.02
The City ordinances shall require mitigation of all adversely impacted wetlands.

Policy 10.06.03
The City ordinances shall encourage the planting of vegetation along the shores of ponds, lakes, borrow pits, and swales.

Policy 10.06.04
The City shall require that fisheries, wildlife habitat, lakes, floodplains, estuarine marshes and marine habits are preserved and conserved in compliance with applicable County, State and Federal regulations.

Policy 10.06.05
The City shall coordinate inter-governmentally when opportunities for the preservation or conservation of unique vegetative communities are located within multiple governmental jurisdictions.

Policy 10.06.06
The City will require environmental assessments of development proposals of vacant properties to ensure that the presence of protected plant or animal species is known and significant impacts can be mitigated as part of the redevelopment process.

Objective 10.07.00 – Hazardous Waste

The City shall comply with the hazardous waste management program relative to the storage, recycling, and disposal of hazardous waste.

Policy 10.07.01
The City shall coordinate with the County's emergency response plan to handle accidents involving hazardous wastes.

Policy 10.07.02
The City shall promote the recycling of hazardous wastes by:
a. Distributing lists of approved recyclers, and
b. Publicizing County "amnesty days".

Policy 10.07.03
The City will continue to encourage the designation, clean up and redevelopment of Brownfield sites.

Objective 10.08.00 – Dune Restoration

The sand dune system shall be protected and enhanced in all City and private sector projects in accordance with a Beach Master Plan to be prepared and adopted by the City.

Policy 10.08.01
The City shall use its development code standards for the beach sand dune to assure the private sector provides proper location, vegetation, walkovers, etc., when private development takes place.

Policy 10.08.02
The City shall work with the Broward County Department of Environmental Protection to assure that any beachfront construction obtains a Coastal Construction Permit.

Objective 10.09.00 – Flood Protection

Require all substantial improvement, new development and redevelopment to be consistent with the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM); Chapter 152 of the City's Code and future maps being prepared to determine appropriate finished floor elevations based on the most recent adopted projections of sea level rise.

Policy 10.09.01
Continue to require all substantial improvement, new development and redevelopment to be consistent with the minimum finished floor elevations as specified in the Federal Emergency Management Administrations Agency Flood Insurance requirements, the South Florida Building Code, Chapter 152 of the City's Code of Ordinances and future maps being prepared to determine appropriate finished floor elevations based on the most recent adopted projections of sea level rise.

Policy 10.09.02
Continue to enforce the land development regulations in Chapter 152 of the City's Code of Ordinances which require finished floor elevations be above the highest point of the adjacent road crown elevations for all new development and substantial improvement in areas that are not identified as flood zones on the FEMA FIRM or where the required finished floor elevation would otherwise be lower.

Policy 10.09.03
The City shall maintain the National Flood Insurance Rate Maps and future maps being prepared which identify appropriate base flood elevations based on the most recent adopted projections of sea level rise in GIS format which enables users to easily identify individual properties.

Policy 10.09.04
The City shall participate in various processes which seek to update the existing 100 year flood plain maps.

APPENDIX J

GUIDELINES FOR DETERMINING ABILITY TO PROVIDE POTABLE WATER AND WASTEWATER SERVICE

Department of Public Works & Transportation • Water & Wastewater Services
WATER & WASTEWATER ENGINEERING DIVISION
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GUIDELINES FOR DETERMINING ABILITY TO PROVIDE POTABLE WATER AND WASTEWATER SERVICE

Date Issued: April 2, 2012
Date Previously Issued: January 18, 2007
Date First Issued: July, 2001

Broward County's Water and Wastewater Services (WWS) must determine its ability to provide the appropriate level of service to potential potable water and/or wastewater customers. Tables 1 and 2 contain WWS' potable water and wastewater level of service standards, respectively.

Table 1 - Potable Water Level of Service Standards

Facility	Level Of Service Standard
Raw Water Supply and Treatment Plant	Maximum Day
Distribution System	The most stringent of: (1) Peak Hour at 45 psi residual pressure, or (2) Maximum Day Plus Fire Flow at 25 psi residual pressure.

Table 2 - Wastewater Level of Service Standards

Facility	Level Of Service Standard
Treatment Plant and Effluent Disposal	Average Day
Collection System	Peak Hour

Often, the demand from a potential customer is so small that an engineering analysis is not necessary to determine if WWS can provide the appropriate level of service. For example, an engineering analysis would not be necessary to connect one single family residence or a fire hydrant to the system. Other times, either because of the amount of demand, or the location in the system, an engineering analysis is necessary.

WWS reserves the right to perform an engineering analysis when it deems the analysis necessary. The analysis will follow the guidelines contained herein.

These Guidelines are based on a combination of information from the 2002 Retail Service Water and Wastewater Master Plan, 2011 WWS Alternative Water Supply Conceptual Master Plan and a 2011 customer usage study conducted by WWS.

WWS' commitment to provide service to new customers occurs when the potential customer pays certain fees and charges.

No guideline can cover all varying circumstances, so WWS reserves the right to act in the best interest of its existing customers.

POTABLE WATER

Determining WWS' ability to serve a potential potable water customer starts with calculating average day demand for the potential customer.

Average Day Demand

Table 3 will be used to calculate average day demand, in gallons per day (gpd).

Table 3 - Potable Water Average Day Demands

Type of Use	Unit	Demand (gpd/unit)
Condominium, Apartment	each	141
Day Child Care	1000 SF of gross building area	124
Fast Food Service	1000 SF of gross building area	473

Type of Use	Unit	Demand (gpd/unit)
Gas Station (fueling only)	fuel pump	70
Hotel	rental room	94
Laundry (coin operated machines)	1000 SF of gross building area	1305
Merchandising	1000 SF of gross building area	37
Mobile Home	lot	156
Office	1000 SF of gross building area	42
Place of Worship	1000 SF of gross building area	47
Restaurant	1000 SF of gross building area	356
School	student	9
Self Service Storage	1000 SF of gross building area	9
Single Family Residential	each	199
Vehicular Repair	1000 SF of gross building area	97
Warehouse (mixed use)	1000 SF of gross building area	33
Warehouse (homogeneous, bulk storage)	1000 SF of gross building area	26

Source: 2011 Usage Study of WWS customers and
2011 Alternative Water Supply Conceptual Master Plan
Normal landscape irrigation requirements are included.
System uses and losses of 8% are included.
WWS reserves the right to develop similar values for other specific types of use not listed above.

Raw Water Supply and Water Treatment Plant

The potable water average day demand calculated above is multiplied by a factor from Table 4 to determine maximum day demand, the level of service condition for raw water supply and water treatment plants. WWS operates four independent water systems, called Districts, and each District has its own factor.

Table 4 - Potable Water Maximum Day Factors

Factor	District 1	District 2	District 3A	District 3BC
Maximum Day To Average Demand Factor	1.28	1.30	***	***

Source: Analysis of plant flow from 1998 thru 2008
Normal landscape irrigation requirements are included in these maximum day factors.
*** Raw water supply and water treatment plant supplied by the City of Hollywood.

Any analysis of available capacity must include prior commitments to serve permitted but not yet constructed developments, as well as existing customer flow. Therefore, the sum of existing customer maximum day flow, prior commitments and potential customer maximum day flow is compared to the facility's permitted capacity.

Example:	Existing customer average day flow	= 4,000,000 gpd
	Prior commitments average day flow	= 1,000,000 gpd
	Potential customer average day flow	= 500,000 gpd
	Total average day flow	= 5,500,000 gpd
	Times maximum day factor of 1.30	= 7,150,000 gpd
	Facility permitted capacity	= 8,000,000 gpd

Existing customer flow plus prior commitments plus potential customer maximum day demand equals 7,150,000 gpd, which is less than the facility's permitted capacity of 8,000,000 gpd. Therefore, WWS can provide the appropriate raw water supply and water treatment plant level of service to this potential customer.

Water Distribution System

Detailed analysis of the distribution system may be done by WWS when WWS reviews detailed engineering issues with the developer as part of WWS' developer coordination process. Distribution system issues are not considered in WWS' earlier reviews, since the nature of the distribution system changes over time as improvements are made. A potential customer must make whatever distribution system improvements are necessary to provide the required level of service in order to proceed with their project.

Before the distribution system analysis can begin, the development plan must be detailed enough to be able to use Table 3 – Potable Water Average Day Demands to calculate the potential customer's average day demand. The potential customer's average day demand will be increased by 50% for use in distribution system analysis and sizing. The increased average day demand is then multiplied by a peak factor from Table 5 to determine maximum day and peak hour demand.

Table 5 – Potable Water Peaking Factors

Factor	District 1	District 2	District 3A	District 3BC
Maximum Day To Average Demand Factor	1.28	1.30	1.37	1.46
Peak Hour To Average Demand Factor	1.73	2.27	1.58	1.86

Source: Maximum Day - Analysis of plant flow from 1998 thru 2008
Peak Hour - Master Plan Table 4-27

The distribution system must be able to provide fire protection as well as water for consumptive uses. Table 6 is WWS' fire protection goals in gallons per minute (gpm).

Table 6 - Fire Protection Goals

Type of Structure	Goal (gpm)
Single Family Residential	1000
Multi-Family Residential	2000
Mobile Home	2000
Small Commercial	2500
Medium Commercial	3000
School	3500
Large Commercial	3500

WWS recognizes that these goals are general in nature and will use a specific fire protection requirement determined by the Fire Marshal or a licensed fire protection specialist, if available. However, in any case, WWS will not be responsible for providing fire protection in excess of 3500 gpm. In setting a top end goal of 3500 gpm, WWS recognizes that individual developments may elect to provide more than 3500 gpm through privately owned and maintained on-site facilities.

Any analysis of available capacity must include prior commitments to serve as well as existing customer flow. There is no "permitted capacity" for a distribution system. Determining if the distribution system can provide the appropriate level of service is accomplished by analyzing the distribution system in each of two loading conditions:

Loading Condition 1. The distribution system is loaded with peak hour demands of existing customers, prior commitments and the potential customer. Under these loading conditions the residual pressure anywhere in the system cannot be less than 45 psi.

Loading Condition 2. The distribution system is loaded with maximum day demands of existing customers, prior commitments and the potential customer; and the potential customer's fire protection demand. Under these loading conditions the residual pressure anywhere in the system cannot be less than 25 psi.

When doing the above analysis, WWS will include representative potential customer on-site piping. In doing so, WWS will determine the minimum size for on-site piping.

Further, the distribution system will be analyzed in two configurations: existing system and future system.

If the distribution system (including the potential customer's on-site piping) meets the minimum residual pressure for each of the two loading conditions, in both the existing and future configuration, then the system can provide the required level of service. If the system cannot provide the required level of service, improvements are necessary to allow the potential customer's project to proceed.

WASTEWATER

Determining WWS' ability to serve a potential wastewater customer starts with calculating average day demand for the potential customer.

Average Day Demand

Table 7 will be used to calculate average day demand, in gallons per day (gpd).

Table 7 – Wastewater Average Day Demands

Type of Use	Unit	Demand (gpd/unit)
Condominium, Apartment	Each	100
Day Child Care	1000 SF of gross building area	101
Fast Food Service	1000 SF of gross building area	385
Gas Station (fueling only)	fuel pump	57
Hotel	rental room	77
Laundry (coin operated machines)	1000 SF of gross building area	1063
Merchandising	1000 SF of gross building area	30
Mobile Home	Lot	111
Office	1000 SF of gross building area	34
Place of Worship	1000 SF of gross building area	38
Restaurant	1000 SF of gross building area	290
School	Student	7
Self Service Storage	1000 SF of gross building area	7
Single Family Residential	Each	142
Vehicular Repair	1000 SF of gross building area	79
Warehouse (mixed use)	1000 SF of gross building area	27
Warehouse (homogeneous, bulk storage)	1000 SF of gross building area	21

Source: Table 3, adjusted for average irrigation usage (30% for residential and 20% for commercial) and system uses and losses
Infiltration/ inflow of 10% is included.
WWS reserves the right to develop similar values for other specific types of use not listed above.

Wastewater Treatment Plant and Effluent Disposal

The wastewater average day demand calculated above is used for the level of service condition for wastewater treatment plant and effluent disposal.

Any analysis of available capacity must include prior commitments to serve permitted but not yet constructed developments, as well as existing customer flow. Therefore, the sum of existing customer average day flow, prior commitments and potential customer average

day demand is compared to the facility's permitted capacity.

Example:	Existing customer average day flow	= 4,000,000 gpd
	Prior commitments average day flow	= 1,000,000 gpd
	Potential customer average day flow	= 500,000 gpd
	Total average day flow	= 5,500,000 gpd
	Facility permitted capacity	= 6,000,000 gpd

Existing customer average day flow plus prior commitments plus potential customer average day demand equals 5,500,000 gpd, which is less than the facility's permitted capacity of 6,000,000 gpd. Therefore, WWS can provide the appropriate wastewater treatment and effluent disposal level of service to this potential customer.

Wastewater Collection System

Detailed analysis of the collection system may be done by WWS when WWS reviews detailed engineering issues with the developer as part of WWS' developer coordination process. Collection system issues are not considered in WWS' earlier reviews, since the nature of the collection system changes over time as improvements are made. A potential customer must make whatever collection system improvements are necessary to provide the required level of service in order to proceed with their project.

Before the collection system analysis can begin, the development plan must be detailed enough to be able to use Table 7 – Wastewater Average Day Demands to calculate the potential customer's average day demand. The potential customer's average day demand will be increased by 50% for use in collection system analysis and sizing.

The increased average day demand is then multiplied by a factor from Table 8 to determine peak demand.

Table 8 – Wastewater Peaking Factors

Number of ERU	Factor
1 to 250	4.2
251 to 600	4.0
601 to 1200	3.8
1201 and above	3.5

Any analysis of available capacity must include prior commitments to serve as well as existing customer flow. There is no "permitted capacity" for a collection system. Determining if the collection system can provide the appropriate level of service is accomplished by analyzing the collection system in a peak loading condition. That is, the

collection system is loaded with the peak demand of existing customers, prior commitments and the potential customer. To accomplish this analysis, WWS will construct a steady state model that approximates the affected portion of the collection system. The model will be based on pipe roughness factors selected by WWS and peak demand flows. Under the peak demand loading condition:

1. All gravity sewers must be able to pass the wastewater without exceeding 90% of full pipe capacity;
2. All force mains must be able to pass the wastewater at a velocity less than 5 feet per second;
3. All pump stations must be able pump the wastewater with an average pump run time of less than 8 hours per day (when pumping non-peak flows) and without the use of the station's standby pump; and
4. Existing pump station pump discharge flow can not be lowered by more than 10%.

Further, the collection system will be analyzed in two configurations: existing system and future system.

If the collection system meets the loading condition criteria in both the existing and future configurations, then the system can provide the required level of service. If the system cannot provide the required level of service, improvements are necessary to allow the potential customer's project to proceed. Improvements may include additional pumping capacity at existing pump stations, additional force main capacity, additional gravity sewer capacity or some combination thereof. In determining the necessary improvements, WWS will not increase pumping capacity in an existing pump station by more that one standard horsepower size, for example, 5 HP can be increased to 7.5 HP; 10 HP can be increased to 15 HP. These horsepower changes can not result in a requirement to change the wetwell size and can not result in a requirement to change the pump station electrical service from 230 volt to 460 volt. If more than 30% of the pump stations (or one station, whichever is greater) in the model require horsepower changes, WWS will require piping improvements that reduce the need to change pump station horsepower to 30% or less of the pump stations in the model(or one station, whichever is greater).