CITY OF KEY WEST, FLORIDA

First Reading: Proposed: February 2, 2021
Adoption: Proposed: February 17, 2021

WATER SUPPLY FACILITIES WORK PLAN

(2020-2030)

Prepared For:

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and
City of Key West Planning Department

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1.0 INTRODUCTION

The purpose of the City of Key West Water Supply Facilities Work Plan (Work Plan) is to identify and plan for the water supply sources and facilities needed to serve existing and new development within its jurisdiction. Chapter 163, Part II, F.S., requires local governments to prepare and adopt Work Plans into their comprehensive plans within 18 months after the water management district approves a regional water supply plan or after its update every five years. The *Lower East Coast Water Supply Plan Update* was approved by the South Florida Water Management District (SFWMD) on November 8, 2018. The City of Key West was granted an extension to complete the Work Plan and transmit it to the Department of Economic Opportunity (DEO). For informational purposes, the Monroe County Water Supply Plan was adopted on January 22, 2020.

Residents of the City of Key West obtain their water directly from the Florida Keys Aqueduct Authority (FKAA), which is responsible for ensuring that enough capacity is available for existing and future customers.

The City of Key West Work Plan will, by reference, include the data, projected supply and demand numbers, conservation initiatives and capital improvements already identified in the FKAA 20-Year Water System Capital Improvement Master Plan (FKAA Master Plan dated December 2006) because Key West is a retail buyer and FKAA is the sole provider of water to the City. According to state guidelines, the Work Plan and the comprehensive plan amendment must address the development of traditional and alternative water supplies, bulk sales agreements and conservation and reuse programs that are necessary to serve existing and new development for at least a 10-year planning period. The City of Key West Work Plan will have the same planning time schedule consistent with the comprehensive plan and the Lower East Coast Water Supply Plan Update.

The City's Work Plan is divided into five sections:

Section 1 – Introduction
Section 2 – Background Information
Section 3 – Data and Analysis
Section 4 – Work Plan Projects/Capital Improvement Element/Schedule
Section 5 – Goals, Objectives, Policies
Section 6 – References, Figures and Appendices

1.1 Statutory History

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

1.2 Statutory Requirements

The City of Key West considered the following statutory provisions when updating the Water Supply Facilities Work Plan:

1. Coordinate appropriate aspects of its comprehensive plan with the South Florida Water Management District's (SFWMD) Lower East Coast Water Supply Plan, [163.3177(4)(a), F.S.]

2. Ensure that its future land use plan is based upon availability of adequate water supplies and public facilities and services [s.163.3177(6)(a), F.S. Data and analysis demonstrating that adequate water supplies and associated public facilities will be available to meet projected growth demands and must accompany all proposed Future Land Use Map amendments submitted to the Department (DEO) for review.

3. Ensure that adequate water supplies and facilities are available to serve new development no later than the date on which the City anticipates issuing a certificate of occupancy and consult with the applicable water supplier prior to approving a building permit to determine whether adequate water supplies will be available to serve the development by the anticipated issuance date of the certificate of occupancy [s.163.3180 (2), F.S., effective July 1, 2005].

4. For local governments subject to a regional water supply plan, revise the General Sanitary Sewer, Solid Waste, Drainage, Potable Water, and Natural Groundwater Aquifer Recharge Element (the "Infrastructure Element"), within 18 months after the water management district approves an updated regional water supply plan, to:
    a. Identify and incorporate the alternative water supply project(s) selected by the local government from projects identified in the updated Lower East Coast Regional Water Supply Plan, or the alternative project proposed by the local government under s. 373.709(8)(b), F.S. [s. 163.3177(6)(c), F.S.];
    b. Identify the traditional and alternative water supply projects, bulk sales agreements, and the conservation and reuse programs necessary to meet current and future water use demands within the Lower East Coast Regional Water Supply Plan [s. 163.3177(6)(c), 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. [s. 163.3177(6)(c), F.S.]

5. Revise the Five-Year Schedule of Capital Improvements to include any water supply, reuse, and conservation projects and programs to be implemented during the five-year period.

6. To the extent necessary to maintain internal consistency after making changes described in Paragraphs 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 SFWMD Lower East Coast Water Supply Plan, as well as the Florida Keys Aqueduct Authority's consumptive use permit. [s.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 appropriate regional water supply plan. [s.163.3167(9), F.S.]

7. To the extent necessary to maintain internal consistency after making changes described in Paragraphs 1 through 5 above, revise the Intergovernmental Coordination Element to ensure coordination of the comprehensive plan with the Lower East Coast Regional Water Supply Plan. [s.163.3177(6)(h)1., F.S.]

8. Address in the Evaluation and Appraisal Report the extent to which the local government has implemented the 10-year water supply facilities work plan, including the development of alternative water supplies, and determine whether the identified alternative water supply projects, traditional water supply projects, bulk sales agreements, and conservation and reuse programs are meeting local water use demands. [s.163.3191 (2), F.S.]

2.0 BACKGROUND INFORMATION

2.1 Overview

The City of Key West was incorporated in 1828, making it the 1st municipality established in Monroe County 17 years before Florida became a state. The City is at the end of island chain known as the Florida Keys (See Exhibit A). The City boundaries incorporate the entirety of the main island and also the northern one half of Stock Island to the east. It also includes the Navy's properties of Fleming Key and Sigsbee. The projected permanent population for 2020, according to the 2010 Ear-based Comprehensive Plan amendments, is 23,997 residents.

The City also has a significant "seasonal population" (approximately 4,000), "transient residents" (over 14,000 on average), cruise ship visitors (high daily average of 3,100), "day trippers" (3,100) and commuters into the City (averaging 3,900). All of these population segments will utilize the City's potable water resources. The combined amount of all population segments above and others represents the "daily functional population" of the City and is estimated to be approximately 58,000 during peak periods. The projected daily functional population for 2020, according to the 2010 Ear-based Comprehensive Plan amendments, is 54,747.

The functional population projections shown in Table 1 are compared with the service area functional population projections contained in the FKAA Master Plan. The Monroe County Planning Department's permanent and seasonal population projections were used to develop this functional population for FKAA's entire service area through 2040. The projected population was then multiplied by FKAA's projected per capita demand to project customer demand in the service area.

The City of Key West has a Building Permit Allocation System (BPAS) that limits new residential and transient development growth based on hurricane evacuation times. In 2013, the City was allocated 910 Equivalent Single-Family Units (ESFU) for development to be distributed over the following 10 years. Since then 300 additional affordable units have been allocated by the State, which was challenged and awarded in court, but is now awaiting the appeals process. Additionally, the City is substantially built-out.

2.2 Relevant Regional Issues

As the state agency responsible for water supply in the Lower East Coast (LEC) planning area, the SFWMD plays a pivotal role in resource protection through criteria used for Consumptive Use Permitting. Consumptive water use permits are issued for a fixed period of time and allow the holder to withdraw a specified amount of water for reasonable-beneficial uses, while requiring water conservation to prevent wasteful uses. These rules protect existing residents' water supplies and protect aquifers from saltwater intrusion damage, as well as to keep surface water sources from drying up.

As pressure increased on the Everglades ecosystem resource, the Governing Board initiated rulemaking to limit increased allocations dependent on the Everglades system. As a result, the Regional Water Availability Rule was adopted by the Governing Board on February 15, 2007 as part of the SFWMD's water use permit program. This reduced reliance on the regional system for future water supply needs, mandated the development of alternative water supplies, and increased conservation and reuse.

The LEC Planning Area relies on fresh groundwater and surface water for urban, agricultural, and industrial uses. However, traditional freshwater sources in the LEC Planning Area are not sufficient to meet projected 2040 water demands. Analyses indicate increases in allocations of fresh groundwater from the Surficial Aquifer System of the Floridan Aquifer and surface water from Lake Okeechobee are not available to meet the growing needs of the LEC Planning Area during 1-in-10-year drought conditions.

The regional issues identified for 2040 in the Lower East Coast Water Supply Plan Update (adopted November 8, 2018) include:

1. Fresh surface water and groundwater are limited; further withdrawals could 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. Expanded use of reclaimed water is necessary to meet future water supply demands and the Ocean Outfall Law.

3. Expanded use of brackish groundwater from the Floridan aquifer system requires careful planning and wellfield management to prevent undesirable changes in water quality.

The sole source provider of potable water to Monroe County is FKAA, whose wellfield is located in Florida City. The limited availability of Surficial Aquifer System withdrawals presents a potential risk to the water supply for all of Monroe County. While this is a ten-year plan, longer term threats from sea level rise, exacerbated by Turkey Point hypersaline plume have grave fiscal and physical consequences for our area that need to be planned for now.

Turkey Point

Millions of gallons of industrial discharge polluted with heavy levels of salt and weak radiation are sinking and spreading from a 6,000-acre cooling canal system (CCS) at the Florida Power & Light Company (FPL) Turkey Point nuclear plant. The western boundary of the CCS is 9.5 miles east of the FKAA wellfield that supplies Key West's fresh water. The hypersaline plume has migrated inland through the Biscayne Aquifer by more than four miles and advances at the rate of about 1 – 1.5 feet a

day. Hydrogeologists and FKAA management made the following statement in a 2017 study: "Apart from naturally occurring seawater, the single most damaging source of groundwater pollution threatening the authority's wellfield is the FPL cooling canal system at Turkey Point."[1]

A Florida Administrative Judge ruled on Feb 15, 2016 that FPL is polluting south Florida's groundwater, threatening to contaminate wellfields providing drinking water to the Florida Keys and parts of Miami Dade County. The Judge also faulted the Florida Department of Environmental Protection (FDEP) for approving a faulty management plan for the Plant. Both were ordered to remediate the cooling canals that continue to release contaminants into groundwater and surface water in Biscayne Bay National Park. Six hundred thousand pounds of salt as well as weak radiation in the form of tritium has also shown up in high levels in Biscayne Bay National Park.

In early 2017, the FKAA, Miami Dade County, the National Park Service and the City of Key West (Resolution 17-033) indicated serious concerns regarding FPL's proposed remediation plans. As a result of pending lawsuits, FPL entered into two consent orders with Miami-Dade County's Department of Environmental Resource Management (DERM) and FDEP. FKAA has a Cooperative Wellfield Protection Agreement with DERM to regulate and manage issues related to protecting FKAA's wellfield.

FPL's two-pronged solution to reverse the contamination is to reduce the salinity in both the canals and the plume. The cooling canal water is pumped into 1,000-foot-deep wells into the Floridan aquifer, at a rate of 14 million gallons of water per day. The hypersaline plume water in the Biscayne aquifer is extracted and injected 3,000 feet deep into the boulder zone. Through these actions FPL believes they will halt the westward migration of the hypersaline plume within 5 years (2021) and retract the plume to Turkey Point's boundaries within 10 years (2026). Their 2015 Consent Agreement with DERM and their 2016 Consent Order with FDEP state that they must decrease salinity in the cooling canals until they match that of Biscayne Bay. According to FKAA (April 2020)), the plume is still moving at the same pace to the west. FPL's 1st Annual Monitoring Report in Nov 2019 stated that they will not halt the westward plume migration by 2021, but that they still expect to meet the 2026 deadline.

DERM is also concerned about how other FPL projects will affect progress. A 2018 Florida Department of Environmental Protection permit allows FPL to move more freshwater to the plant's southern wetlands, which in turn removes freshwater pressure against the hypersaline plumes to the west of their property. DERM asked the state Department of Environmental Protection to reverse this permit as the consent agreement specifically wanted freshwater on FPL's western wetlands mitigation banks to help hold back the plume.

In Feb 2019, DERM and FKAA filed an Administrative Challenge under Chapter 120 against FPL and FDEP, charging that FDEP granted the permit to FPL in violation of DERM's Consent Agreement. The permit allowed the reduction of water levels in the Everglades Mitigation Bank culvert weirs from 2.2 feet to 1.8 feet NVGD. In August of 2020, Monroe County intervened in the Challenge and agreed to contribute half of FKAA's outside counsel legal fees. In Sept 2020, the cities of Marathon, Islamorada and Key West also contributed funds towards the legal fees.

[1] Rising Tides and Sinking Brines: Managing the Threat of Salt Water Intrusion. McThenia, Andrew W., Martin, W. Kirk, and Reynolds, Jolynn. Florida Water Resources Journal. August 2017.

DERM is also fighting FPL's March 2019 draft NPDES pollution permit with FDEP. The draft introduced new language that would allow discharges to surface waters from the cooling canals via "seepage", which DERM argued is illegal for many reasons. This permit has not been finalized yet.

DERM is also at odds with other Miami-Dade County efforts. While DERM has been pressuring FPL to follow the consent order, the County's Water and Sewer Department (WSAD) has been working on a Joint Participation Agreement with FPL to develop an advanced wastewater system that would help WASD meet their mandate to eliminate ocean outfalls of sewage by 2025.

In April 2020, FKAA wrote to the FDEP and the Miami Dade Board of Commissioners, noting that the draft Joint Agreement puts Miami Dade County in a compromised position and that the Agreement should acknowledge and reinforce the existing Consent Order FPL is beholden to the County for.

Accompanying the letter's 16 proposed changes to the Joint Agreement was a recently completed study modeling how FPL's "freshening" actually flushes the canals saline and nutrient loaded pollution into the surrounding area. The study modeled that the "freshening" would actually double the amount of water emanating from the cooling canals. WASD's Plant is listed in the 2018 Lower East Coast Water Supply Plan, Water Supply Projects as: "Reclaimed Water for FPL Turkey Point", 60 MGD wastewater, 45 MGD reclaimed, completion date 2025

In March of the same year, FDEP granted FPL their request for a post-certification amendment to their Site Certification Application under the Power Plant Siting Act to install a pipeline in preparation for changes attributable to the wastewater plant. The impacts to the Biscayne aquifer were still not addressed.

Since 2017, FKAA has contended that FPL not be allowed to expand or get any permits until it has decommissioned the cooling canal system at the heart of the plume. FKAA has added 6 new wells, as the saltwater intrusion made 7 of their existing wells obsolete for monitoring purposes.

In December 2019, FPL became the first power company in the U.S to be granted a second 20-year extension for two reactors by the US Nuclear Regulatory Commission. This federal approval allows the reactors to operate until their 80th year, twice as long as their original 40-year license.

This extension has reduced FPL's need to expand Turkey Point. It had plans to build two new reactors (#6 and #7), but as of 2020, they said there are no plans at this time. It is noted in the LEC that their 2010 agreement with WASD for up to 90 mgd reclaimed water for the two new units is still under consideration. Turkey Point is a major issue threatening our drinking water and all efforts to reverse it should be taken. Until this happens, one of the few options that residents have is to use less water from the aquifer to keep a strong head pressure on the lens.

Sea Level Rise

Sea level rise has been identified as a regional water issue by the Southeast Florida Regional Climate Change Compact, which includes Palm Beach, Broward, Miami-Dade and Monroe Counties. The Compact communities have agreed to use a sea level rise projection of between 6 and 10 inches by 2030, and between 14 and 26 inches by the year 2060 for planning purposes in the Southeast Florida region until more definitive information on future sea level rise is available (See the Compact's, "A Unified Sea Level Rise Projection for Southeast Florida, October, 2015). The potential landward movement of the saltwater intrusion line resulting from the impact of sea level rise may affect future decisions regarding the implementation of capital improvements, requiring mitigation and adaptation strategies to preserve the potable water supply. Monroe County's climate change and

sustainability consultants have recently summarized hydrologic modeling by the United States Geological Survey that suggests relatively low risk to the FKAA wellfields in Florida City under even the worst-case 2060 sea level rise scenarios. However, FKAA continues to monitor the most current data and analysis regarding this issue.

FKAA is currently in negotiations with Miami Dade County on a shared freshwater treatment facility. FKAA's treatment facility has extra capacity and Miami Dade's nearest wellfield cannot treat their potable water to the same quality. It is considered highly likely that this partnership will happen, although it isn't settled yet.

FKAA also operates Reverse Osmosis (RO) facilities in Marathon and Stock Island, with a combined supply capacity of 3 MGD, as an alternative water source for the County. Potable water costs are approximately 35x more per gallon when produced at these facilities and are for emergencies and extreme peaks in demand only. The Stock Island Plant will be receiving $30 million in state funding to renovate and upgrade the plant, which should make it more efficient and less costly to operate.

3.0 DATA AND ANALYSIS

The intent of the data and analysis section of the Work Plan is to describe the information that local governments need to provide to state planning and regulatory agencies as part of their proposed comprehensive plan amendments, particularly those that would change the Future Land Use Map (FLUM) to increase density and intensity.

3.1 Population Information

Table 1 shows the City's permanent and functional population projections through 2040. The City of Key West population figures through 2030 are derived from the projections prepared by Keith and Schnars for the City of Key West Ear-based Comprehensive Plan amendments in 2012. The 2035 and 2040 estimates were extrapolated from FKAA's 2020 Water System Master Plan, as 34.54 percent of Monroe County's functional population.

Table 1
2010-2030: Population Projections

Year	Permanent Population	Seasonal and Temporary	Functional Population
2010	24,649	21,704	54,347
2015	24,348	22,104	54,446
2020	23,997	22,756	54,747
2025	23,660	23,407	55,061
2030	23,350	24,059	55,403
2035	X	X	56,891
2040	X	X	57,274

This decline in permanent population growth is reflective of the fact that the City is substantially built-out, with future development potential and population growth limited by the scarcity of vacant and developable land and the BPAS.

3.2 Maps of Current and Future Areas Served

The maps contained in the Exhibit A map series at the end of this document depict the FKAA Water System in its entirety. The map depicting current and future City boundaries served by the FKAA is provided. At this time, there are no areas anticipated to be annexed.

3.3 Potable Water Level of Service Standard

FKAA's potable water consumption level of service planning standard is 115 gallons/capita/day (GPCD). In light of Turkey Point and Sea Level Rise, it is advised that the City adopt the County's 100 GPCD LOS standard, as well as adopt strong water conservation policies as outlined in this Plan and the associated Goals, Objectives and Policies.

Key West's non-residential LOS is recommended to be deleted as a separate standard. The rationale for this recommendation is that different non-residential uses vary significantly in their water needs. For example, a 20,000 square foot parking lot would require a fraction of water used in a 20,000 square foot laundry facility. Most municipal water supply plan LOS in the State of Florida are

calculated on the same GPCD basis. For example, Monroe County uses 100 gallons/capita/day for all developments.

Table 2 – Level of Standards for Potable Water

	City of Key West	Monroe County
Residential	100 gallons/capita/day	100 gallons/capita/day
Non-Residential	~~650 gallons/acre/day~~	

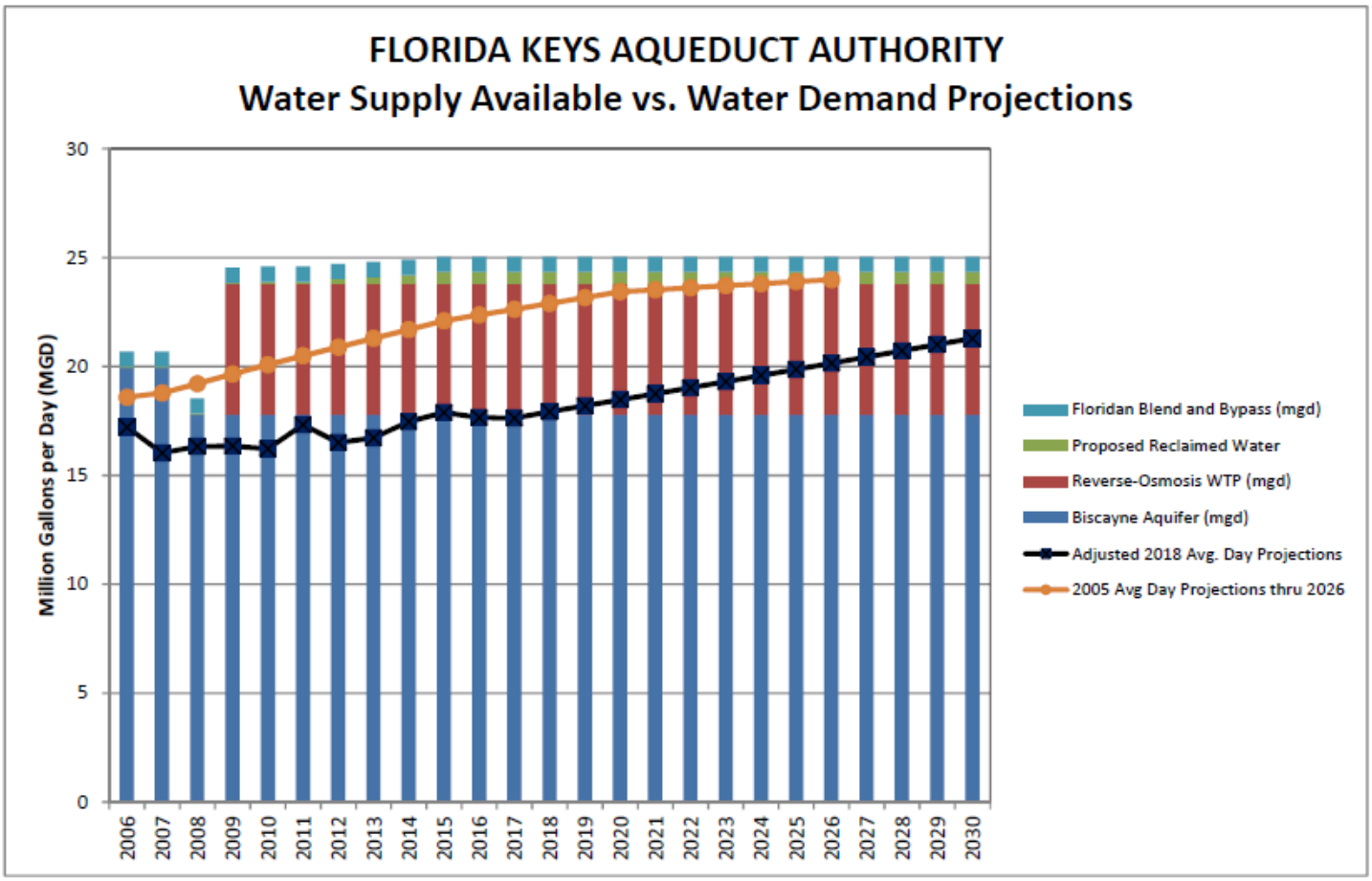
3.4 Population and Potable Water Demand Projections by Local Government and Utility

Table 3 - City of Key West Population and Water Supply Demands

	WATER SUPPLY UTILITY SERVICE WITHIN WATER DISTRIBUTION SERVICE AREA							
SERVICE AREA	FUNCTIONAL POPULATION PROJECTIONS				WATER SUPPLY DEMAND Million Gallons per Day (MGD) Max			
YEAR	2020	2025	2030	2040	2020	2025	2030	2040
TOTAL FKAA SERVICE POPULATION*	159,252	161,604	163,956	165,797	22.9	23.2	23.6	23.8
	CITY OF KEY WEST							
Daily Functional Population	54,747	55,061	55,403	57,274*	5.47	5.50	5.54	5.72

*estimated by multiplying 2040 Monroe County functional population by 2010-2030 Key West functional population percentage (34.54%).

Figure 1: FKAA 2019 Water Demand Projections Update



3.5 Water Supply Provided by Local Government

The FKAA is a retailer service provider to residents, businesses and other entities requiring water services. Therefore, water supply is not provided by the City.

3.6 Water Supply Provided by Other Entities

The FKAA wellfield is located in a pineland preserve west of Florida City in southern Miami-Dade County (See Exhibit A, Miami-Dade County Wellfield Protection Areas). The water is treated at the FKAA's Water Treatment Facility in Florida City which has a maximum design capacity of 29.8 Million Gallons per Day (MGD). The primary water treatment process is a conventional lime softening/filtration water treatment plant and is capable of treating up to 23.8 MGD from the Biscayne Aquifer. The secondary water treatment facility at this location is the Reverse Osmosis (RO) plant which is capable of producing 6 MGD from the brackish Floridan Aquifer. Under CUP 13-0005-W (valid through March 13, 2028), the FKAA is allowed an annual withdrawal from the aquifers of 8.751 billion gallons of water.

Water from these facilities, with the aid of booster pump stations, travels the length of the Keys terminating at Key West (approximately 130 miles). Distribution is generally through a 36-inch transmission line decreasing in size to an 18-inch line upon entering the City. From that line a feeder system disperses the water throughout the community.

The FKAA maintains storage tank facilities which provide an overall storage capacity of 45.2 million gallons systemwide. The sizes of tanks vary from 0.2 to 5.0 million gallons. These tanks are utilized during periods of peak water demand and serve as an emergency water supply. Since the existing transmission line serves the entire Florida Keys (including Key West), and storage capacity is an integral part of the system, the capacity of the entire system must be considered together, rather than in separate service districts.

Additionally, two saltwater RO plants, located on Stock Island and Marathon, are available to produce water under emergency conditions. Their design capacities are 2.0 and 1.0 MGD, respectively.

At this time, the FKAA system is a closed system that is not connected to any other system.

3.6.1 Demand for Potable Water

Tables 4 and 5 provide a historical overview of the water demands in the FKAA service area including Water Use Permit (WUP) allocation limits, yearly percent changes, and remaining water allocations. Along with the reverse osmosis water treatment plant in Florida City, compliance with withdrawal limits can also be accomplished by using other alternative water sources (blending of the Floridan Aquifer, reclaimed water and operation of the RO desalination plants), pressure reduction, public outreach, and assistance from municipal agencies in enforcing water conservation ordinances.

Table 4. Annual Water Withdrawals 2002-2018

Year	Annual Withdrawal (MG)	% Change	WUP Limit (MG)	WUP +/- Annual Allocation (MG)
2002	6,191	10.03%	7,274	1,083
2003	6,288	1.57%	7,274	986
2004	6,383	2.74%	7,274	813
2005	6,477	0.16%	7,274	803
2006	6,283	-2.49%	7,274	964
2007	5,850	-7.35%	7,274	1,428
2008	5,960	1.89%	8,751	2,791
2009	5,966	0.09%	8,751	2,785
2010	5,919	-0.79%	8,751	2,832
2011	6,327	6.89%	8,751	2,424
2012	6,042	-4.50%	8,751	2,709
2013	6,105	1.04%	8,751	2,646
2014	6,377	4.46%	8,751	2,374
2015	6,530	2.40%	8,751	2,221
2016	6,462	-1.04%	8,751	2,289
2017	6,324	-2.13%	8,751	2,427
2018	6,526	3.10%	8,751	2,225

Source: Florida Keys Aqueduct Authority, 2019

In 2018, the FKAA distributed an annual average of 17.64 MGD from the Biscayne Aquifer plus 0.24 MGD from Floridan RO Production (Table 5). This table also provides the water treatment capacities of the emergency RO

plants. Since the emergency RO plants utilize seawater, a Water Use Permit (WUP) is not required for these facilities.

Table 5 – FKAA Projected Water Demand in 2019 (in MG)

	FKAA Permit Thresholds	2018 Water Demand	2019 Water Demand Projected
Annual Allocation			
Average Daily Demand	23.98	17.64	18.2
Maximum Monthly Demand	809.01	586.04	604.37
Annual Demand	8,751	6,440	6,641
Biscayne Aquifer Annual Allocation/Limitations			
Average Daily Demand	17.79	17.64	17.79
Annual Demand	6,492	6,439	6,492
Floridan RO Production			
Average Daily Demand	6.00	0.24	0.41
Emergency RO WTP Facilities			
Kermit L. Lewin Design Capacity	2.00 (MGD)	0.00 (MGY)	0.00

The 2018 figures and projections for 2019 indicate a slight increase in annual average daily demand from 17.64 to 18.2 MGD and an increase in maximum monthly demand from 586.04 MGD to 604.37 MG. Preliminary projections from FKAA for 2020 indicate no increase in annual average daily demand from the 2019 projections.

Table 6 provides the amount of water used on a per capita basis. Based on Functional Population and average daily demand, the average water consumption for 2018 was approximately 113 gallons per capita (person), which reflects the entire FKAA service area, including unincorporated Monroe County, Key West, Marathon, Islamorada, Key Colony Beach, and Layton.

Table 6 – Keyswide Per Capita Water Use

Figure 6 - Per Capita Water Use			
Year	**Functional Population[1]**	**Daily Demand (gallons)[2]**	**Average Per Capita Water Consumption (gallons)[2]**
2000	153,080	17,016,393	111
2001	153,552	15,415,616	100
2002	154,023	16,962,082	110
2003	154,495	17,228,192	112
2004	154,924	17,652,596	114
2005	156,150	17,730,000	114
2006	155,738	17,287,671	111
2007	155,440	16,017,315	103
2008	154,728	16,285,383	105
2009	155,441	16,345,205	105
2010	155,288	16,210,959	104
2011	156,054	17,334,247	111
2012	156,391	16,508,197	106
2013	156,727	16,836,164	107
2014	157,063	17,472,362	111
2015*	157,400	17,890,000	114
2016*	157,730	17,660,000	112
2017*	158,060	17,630,000	112
2018*	155,211	17,690,000	114
2019		Requested from FKAA ~~10/26~~12/9	

**From FKAA Spreadsheet: FKAA Water Demand 2019 update*

3.6.2 Improvements to Potable Water Facilities

FKAA has a 20-year Water System Capital Improvement Master Plan for water supply, water treatment, transmission mains and booster pump stations, distribution mains, facilities and structures, information technology, reclaimed water systems, and Navy water systems.

In 1989, FKAA embarked on the Distribution System Upgrade Program to replace approximately 190 miles of galvanized lines throughout the Keys. FKAA continues to replace and upgrade its distribution system throughout the Florida Keys and the schedule for these upgrades is reflected in their long-range capital improvement plan.

Table 7 provides the schedule and costs projected for the capital improvements to the potable/alternative water systems planned by the FKAA. The total cost of the scheduled improvements is approximately $140 million over the next 5 years. These projects are to be funded by water rate structure, long-term bank loans, and grants.

Table 7 – FKAA Projected 5 Year Capital Improvement Plan

	FY 2020	FY 2021	FY 2022	FY 2023	FY 2024	Total
Key West Administrative Building	9,000,000	9,000,000	4,364,000	-	-	22,364,000
Stock Island RO Facility	3,000,000	14,000,000	18,000,000	15,000,000	-	50,000,000
Grassy Key Transmission Line Replacement	8,000,000					8,000,000
Transmission Terminus Replacement				840,000	3,360,000	4,200,000
Simonton, Front, Whithead	750,000				1,250,000	2,000,000
Islamorada Transmission Line Replacement	2,670,000	13,350,000	10,680,000			26,700,000
Ocean Reef Distribution and Storage Improvements				3,200,000	3,900,000	7,100,000
New Distribution System at No Name Key	2,600,000					2,600,000
Stock Island Garage Replacement	-				420,000	420,000
Box Girder Bridge Coating/coupling Replacement	-				3,870,000	3,870,000
Florida City Generator Control Panel Replcaemnt					500,000	500,000
Stock Island Pump Station And Generator Replacement	7,000,000					7,000,000
Repair/Upgrade Subaqeous Crossing	2,000,000					2,000,000
Repair/Replace Cathodic Protection	2,700,000					2,700,000
Repair/Upgrade Electrical and Instrumentation	1,000,000					1,000,000
Totals	**38,720,000**	**36,350,000**	**33,044,000**	**19,040,000**	**13,300,000**	**140,454,000**
Source: Florida Keys Aqueduct Authority, 2019 Budget & Financial Plan						

In summary, based on current conditions and projects, an adequate supply of water to meet current and future demands is provided by the following: The Biscayne permitted water supply of 17.79 MGD, the 6.0 MGD RO water treatment plant, the new reclaimed water systems, and the ability to operate the 3.0 MGD RO combined desalination plants during emergency situations. The FKAA continues to monitor and track conditions and events that could negatively impact the existing water supply. Any such impacts will be evaluated to determine future changes necessary to continue servicing Monroe County with adequate water supply.

3.7 Conservation

A high priority is placed on water conservation by the SFWMD, FKAA, Monroe County and the City of Key West. It is a mandate to implement Best Management Practices in addition to various irrigation, xeriscape, plumbing fixture efficiency and wastewater reuse requirements.

3.7.1 County-wide Issues

Water conservation continues to be of the highest priority within the Lower East Coast region of Florida, no more so than in the Keys:

- Monroe County and the City of Key West have Rate of Growth Ordinances that limit new residential and transient development growth based on hurricane evacuation times.
- The use of potable water for irrigation is regulated by SFWMD's mandatory year-round landscape irrigation conservation measures under Chapter 40E-24, Florida Administrative Code. Key West will be recognizing this as an ordinance upon the acceptance of this plan.
- FKAA implements a high base water rate for water use, which effectively deters wasteful water use.
- Other programs that have been instituted by the FKAA and as outlined in its 2007 Water Conservation Plan include: leak detection, a public information program, the Florida-Friendly Landscape Ordinance/Permanent Irrigation Ordinance, plumbing fixture efficiency standards, filter backwash recycling, reuse of wastewater, and metering.

3.7.2 Local Government Specific Actions, Programs, Regulations, or Opportunities

The City of Key West continues to strive to reduce potable water use.

The City's Building Permit Allocation System (BPAS) requires the installation of a cistern for every new residential building, with its capacity equal to the roofs' square footage. Every new residential building also has to build to a Green Building Certification of at least "bronze", which incorporates many water saving measures. Through just six (6) years of BPAS, not only have 266,600 gallons of cistern capacity been approved, but 79% of the buildings built to a higher tier than Bronze, including 74 Platinum units.

Since 2012, the City has partnered with the FKAA for a Rainbarrel Workshop in April for Water Conservation Month. Through this small program, we have supported the construction of more than one hundred rainbarrels that can each hold up to fifty gallons of rain water.

For the first Water Supply Facilities Work Plan, the City coordinated multiple meetings with all six planning departments across the Keys' local governments and worked alongside FKAA and SFWMD to help each other create policies that could be adopted across jurisdictions. The City repeated the process this year as well, which led to a ranking of future water conservation projects:

Table 8 – Keyswide Planners Ranking for Water Efficiency Actions

Rank	Action
1	Formally support FKAA in opposing Turkey Point cooling systems and their FDEP permits for expansion
2	Enact Building Code amendments to mandate high efficiency water fixtures like Miami Dade County
3	Enforce existing water conservation rules (soil moisture sensors, daytime watering)
4	Enact Building Code amendments to mandate fixtures have Water Star Certification
5	Explore feasibility of Toilet to Tap at Fleming Key Wastewater Treatment Plant
6	Partner with FKAA to examine feasibility of further refinement of their Water Consumption Tiers

The City will continue to coordinate future water conservation efforts with the FKAA, the SFWMD, Monroe County and all other Florida Keys municipalities as necessary to ensure that proper techniques are applied. In addition, the City will continue to support and expand existing goals, objectives and policies in the comprehensive plan that promote water conservation in a cost-effective

and environmentally sensitive manner. The City will continue to actively support the SFWMD, FKAA and Monroe County in the implementation of new regulations or programs that are designed to conserve water. As stated previously, the goal of the FKAA for potable water consumption is to maintain an overall level of service standard of 100 gallons/capita/day. As part of this Water Supply Plan, it is recommended that the City adopt this as its standard, providing for consistency with the goals of the water service provider. In addition, it is recommended that the City adopt water conservation policies as outlined in this Plan and the associated Goals, Objectives and Policies.

3.8 Reuse

Water reuse is a method for supplementing water availability. Desalination at the source through reverse osmosis is presently incorporated within the design of new water treatment facilities that tap into the Floridan Aquifer. The City's Golf course on north Stock Island, receives reuse water for irrigation from Monroe County's WWTP on south Stock Island.

FKAA and the City have looked into incorporating reuse from the Fleming Key WWTP, but the cost of developing a separate distribution system for recycled water in a very urban area creates significant disturbance and cost challenges.

3.8.1 Regional and County-wide Issues

State law supports reuse efforts. Florida's utilities, local governments, and water management districts have led the nation in implementing water reuse programs that increase the quantity of reclaimed water used and public acceptance of reuse programs. Section 373.250(1) F.S. provides that "water reuse programs designed and operated in compliance with Florida's rules governing reuse are deemed protective of public health and environmental quality." In addition, Section 403.064(1), F.S., provides that "reuse is a critical component of meeting the State's existing and future water supply needs while sustaining natural systems."

The City supports water reuse policies and programs being implemented by the SFWMD, Monroe County and the FKAA. The FKAA has committed to implement water reuse/reclaimed water projects. Reclaimed water serves as an Alternative Water Supply. The benefits of reclaimed water include the disposal of appropriately treated effluent (sewage) in an environmentally friendly manner (such as into marshland), extending the life of water sources, postponing water supply related infrastructure, and irrigation. Both the Big Coppitt Wastewater Treatment Plant and the Hawk's Cay/Duck Key Wastewater Treatment Plant are water reclamation facilities providing reclaimed water to a portion of their service areas.

3.8.2 Local Government Specific Actions, Programs, Regulations, or Opportunities

The City's Richard A. Heyman Environmental Protection Facility is a Wastewater Treatment Plant that is one treatment step away from potable water. This resource would have been very useful during Hurricane Irma when household line breakages greatly reduced the volume of water that could be delivered. Within two years of adoption, the City shall perform a feasibility study for both emergency and daily use alterations to the existing Wastewater Facility.

The City will support the SFWMD, FKAA and Monroe County water reuse projects and implementation of new regulations or programs designed to increase the public acceptance of reclaimed water, as well as the volume of it used.

4.0 CAPITAL IMPROVEMENTS

4.1 Work Plan Projects

The City's Five-Year Capital Improvements Program for FY 2020/2021 – 2024/2025 does not include improvements to the Potable Water System.

The Monroe County Local Mitigation Strategy includes a City of Key West Feasibility Study for creating potable water from the Richard A Heyman Environmental Protection Facility. This is not yet budgeted by the City.

The FKAA 20-Year Water System Capital Improvement Master Plan identifies all proposed work projects within Monroe County (See Exhibit B: Section 7.2 of the master plan).

4.2.1 Capital Improvements Element/Schedule

The City of Key West will continue to work with FKAA to ensure that the adopted LOS is maintained. Exhibit 7-2 of the FKAA 20-Year Water System Capital Improvement Master Plan will serve as the City of Key Wests' 10-year Water Supply Plan and CIE for potable water (see Exhibit A).

5.0 GOALS, OBJECTIVES AND POLICIES

Section 1: That the following modifications and/or additions of Goals, Objectives and Policies to the 2013 City of Key West Comprehensive Plan are hereby modified as follows*:

CHAPTER 1: FUTURE LAND USE ELEMENT

OBJECTIVE 1-1.7: IMPLEMENT WATER SUPPLY PLANNING IN ACCORDANCE WITH STATE GROWTH MANAGEMENT REQUIREMENTS.

Adoption and Update of Water Supply Plan ~~by 2014~~ every five years after 2015, and within 18 months of update to the Lower East Coast Water Supply Plan, expected every 5 years.

OBJECTIVE 1-1.12: CONSIDER APPLICATION OF INNOVATIVE LAND AND WATER RESOURCE MANAGEMENT, CLIMATE ADAPTATION, AND ENERGY CONSERVATION CONCEPTS.

Policy 1.1.12.6: Water Efficiency in Building and Construction. The City shall set and enforce progressive water efficient building codes and retrofits, including but not limited to retrofit at resale, mandatory reuse areas, conservation tier rates, irrigation pump pressure control reduction, and the International Green Construction Code. The City shall explore regulatory and/or incentive programs and timelines to increase submetering, fixed interval metering, irrigation audits, rain/moisture sensor retrofits, The City shall promote attendance at regional training workshops in water conservation in construction and continue to foster cooperative relationships between building trades, architects, engineers and building officials.

Policy 1.1.12.7: Conservation Tier Rates. The City shall coordinate with the FKAA and other local governments on a conservation rate structure, as per Monroe County's Water Supply Plan.

Policy 1.1.12.8: Stormwater Mitigation. The City shall research and adopt new methodologies for rainwater retention in order to increase freshwater recharge as well as reduce stormwater flooding and nonpoint pollution. These new methodologies could include but are not limited to cisterns, percolation tanks, green infrastructure, and stormwater mitigation fees.

CHAPTER 4: PUBLIC FACILITIES ELEMENT

Objective 4-1.2: Adoption of the Key West Water Supply Facilities Work Plan.

The City of Key West shall comply with its Water Supply Facilities Work Plan ~~2012-2025~~ 2020-2030 (Work Plan) adopted __TBA, 2020___ ~~March 19, 2013~~, as required by section 163.3177(6)(c), F.S. within 18 months after the governing board of South Florida Water Management District approved its Lower East Coast Water Supply Plan Update on November 8, 2018. ~~February 15, 2007~~ In April 2020, the City of Key West received an extension regarding this requirement until March 31, 2021.

The Work Plan will be updated, at a minimum, every 5 years. The City's Work Plan is designed to: assess current and projected potable water demands; evaluate the sources and capacities of available water supplies; and identify those water supply projects, using all available technologies, necessary to meet the City's water demands for the planning period.

Monitoring Measure:

The Work Plan shall remain consistent with the Florida Keys Aqueduct Authority 20-Year Water System Capital Improvement Master Plan, which is compatible with the FKAA Water Use Permit renewals and with the projects listed in the most recent South Florida Water Management District's Lower East Coast Regional Water Supply Plan Update ~~adopted September 12, 2013~~. The Work Plan will be updated, at a minimum, every 5 years and within 18 months after the South Florida Water Management District's approval of an updated Lower East Coast Regional Water Supply Plan.

Policy 4-1.2.1: Compliance with the Adopted Water Supply Facilities Work Plan.

The City of Key West shall comply with its Water Supply Facilities Work Plan (2020–2030 ~~2012-2025~~). ~~which is incorporated by reference into the Comprehensive Plan.~~

Policy 4-1.2.2: Intergovernmental Coordination with Water Supply Planning

Coordinate appropriate aspects of its Comprehensive Plan with the South Florida Water Management District's Lower East Coast Regional Water Supply Plan update adopted November 8, 2018~~September 12, 2013~~, with the Florida Keys Aqueduct Authority (FKAA) 20-Year Water System Capital Improvement Master Plan adopted TBA ~~December 2006~~ and as updated by the agency's ~~2015~~ 2020 fiscal and subsequent budgets and with the Monroe County Water Supply Plan adopted in 2020 (as necessary). The City shall amend its Comprehensive Plan and Work Plan, as required, to provide consistency with the District, County and FKAA plans.

CHAPTER 5: COASTAL MANAGEMENT ELEMENT

Policy 5-1.2.2: Limit Impacts of Development and Redevelopment Upon Water Quality and Quantity, Wildlife Habitat and Living Marine Resources and Implement Policies for Shoreline Land Uses.

6. Ocean, Gulf, and Estuarine Water Quality.

In order to protect the water quality of the Atlantic Ocean and the Gulf of Mexico, no new point source pollution shall be permitted to discharge into these waters or into ditches or canals flowing into these waters. In addition, in order to reduce nonpoint source pollutants, the City shall require the following:

f. By ~~2017~~2022, The City shall incorporate ~~and encourage evaluation of~~ rainwater collection, distribution and percolation systems policies into stormwater management planning.

g. The City shall support and advertise ~~research~~ certification and licensing programs which encourage responsible business practices. This includes but is not limited to EPA's WaterSense, Florida's WaterStar, ~~the~~ Green Industries – Best Management Program, the ~~-~~irrigation specialty contractor's license, and reef safe sunscreens.

Policy 6-1.2.5: Protection and Conservation of Potable Water Supply.

The City of Key West has no wellfields and has no need for a wellfield protection ordinance. In order to comply with policies of the South Florida Water Management District directed toward conservation of potable water supply, reduce irrigation needs and to achieve a reduction in the current rates of water consumption, Land Development Regulations shall be amended to incorporate the following performance standards:

3. ~~In order to reduce demand for irrigation water (which in turn often places greater demand upon potable water sources),~~ At least fifty (50%) percent of all landscaping material obtained from offsite sources for use on any site should be native plant material adapted to soil and climatic conditions existing on the subject site. Further, at least thirty (30%) percent of all trees used in landscaping shall be native species adapted to soil and climatic conditions existing on-site in order to lessen water demand.

6. At least 75% of the landscape must utilize 'right plant, right place' practices, as defined by Florida-Friendly Landscaping Design Standards.

7. In order to reduce demand for potable water used as irrigation, the City adopts SFWMD's mandatory year-round permanent landscape irrigation measures, as written in Chapter 40E-24, Florida Administrative Code. The City shall incorporate Rules 40E-24.201 and 40E-24.301 into its Code of Ordinances, with the intent and purpose of establishing a regulatory framework to protect the water resources of the City of Key West.

Policy 6-1.2.8: Water Supply Demand.

Implementation of the Work Plan shall ensure that adequate water supplies and public facilities are available to serve the water supply demands of any population growth that the City may experience. The City shall also work to reduce the water supply demand through efficiencies and conservation.

Policy 6-1.2.9: Coordinated Water Supply Planning.

The City shall coordinate the planning of potable water and sanitary sewer facilities, water supply sources, demands, other services and level-of-service standards with the FKAA, South Florida Water Management District, other local municipalities and through the most recent version of the Lower East Coast Water Supply Plan Update ~~adopted September 12,2013~~, as necessary.

Policy 6-1.2.12: Efficient Equipment and Appliances.

The City will require the use of high efficiency/ultra-low volume toilets, showerheads, faucets, clothes washers and dishwashers that are Energy Star rated and WaterSense certified in all new residential and commercial projects, including major and minor development plans.

Policy 6-1.2.14: Landscape Guidelines.

The City will adopt Florida-Friendly Landscape guidelines and principals; gutter downspouts, roof runoff, and rain harvesting through the use of cisterns, rain barrels and directing runoff to landscaped areas; drip irrigation or micro- sprinklers; rain or moisture sensor irrigation controllers; and the use of porous surface materials (bricks, gravel, turf block, mulch, pervious concrete, etc.) on walkways, driveways and patios.

By 2022, the City shall research and enact policies and guidelines allowing cistern capacity to satisfy stormwater storage requirements.

Policy 6-1.2.19: Proactive Building Codes

The City shall research and adopt sections of the International Green Construction Code or other established efficiency standards that increase efficiency without substantially increasing cost or complexity.

CHAPTER 8: INTERGOVERNMENTAL COORDINATION ELEMENT

Policy 8-1.3.5: Coordinated Facility Planning.

The City shall coordinate the planning of potable water and sanitary sewer facilities, water supply sources, demands, other services and level-of-service standards with the FKAA, South Florida Water Management District and through the most recent Lower East Coast Water Supply Plan Update ~~adopted September 12, 2013~~, as necessary.

Policy 8-1.3.7: Inter-Local Agreements.

Negotiate or renew inter-local agreements with water supply providers, ensuring contractual agreement of the adopted level of service standards, service area, populations and times for services provided.

Seek an interlocal agreement with Miami Dade County providing the City of Key West with an opportunity to comment on land use and regulatory issues related to the Florida City wellfield, aquifer and aquifer recharge area. This will set forth procedures for review of land use and regulatory activities identified as having potentially significant impacts on the aquifer recharge and water supply systems especially concerning hazardous waste generation. Criteria for determination of significant impacts shall be included in the interlocal agreement.

Policy 9-1.6.1: Level of Service Standards.

Potable Water Level of Service

~~Residential~~

~~100 gal/capita/day~~

1. Quantity: 100 gallons/capita/day

2. Minimum Pressure: 20 PSI at customer service

3. Minimum Potable Water Quality: Shall be defined by Chapter 62-550 F.A.C.

Policy 9-4.1.1: Coordination of Land Use and Water Service ~~and~~ Delivery Systems.

The City will ensure the financial feasibility of the public water infrastructure system by coordinating its land development practices with the FKAA water service production and delivery systems.

Policy 9-4.1.3: Capital Improvement Schedules of Other Agencies.

The City shall incorporate capital improvements affecting City levels of service by referencing the Capital Improvements Schedules of the FKAA (FY2020 ~~2015/2016~~ through FY2024 ~~2020/2021~~) state agencies and other units of government providing services, but not having regulatory authority over the use of land, into its Five-Year Schedule of Capital Improvements (Fiscal Years 2020 through 2024). The City Schedule shall be maintained and updated annually.

CHAPTER 14 – BUILDINGS AND BUILDING REGULATIONS

Sec. 14-35. - Amendments to Building Code.

The Florida Building Code adopted by the provisions of section 14-31 is amended in the following respects:

Sec. 604.4, Florida Building Code, Plumbing

The City hereby adopts the following local technical amendments to Chapter 6 (Plumbing) of the Florida Building Code.

604.4 Maximum flow and water consumption.

The maximum water consumption flow rates and quantities for all plumbing fixtures, fixture fittings and appliances shall be in accordance with Table 604.4. Effective July 1, 2021, permit applications for all residential and commercial new construction and renovations shall include high efficiency plumbing fixtures, fixture fittings and appliances as provided in Table 604.4. Such high efficiency plumbing fixtures, fixture fittings and appliances shall comply with the specifications in Table 604.4 or have received the U.S. Environmental Protection Agency (EPA) WaterSense Label.

Exceptions:

1. Blowout design water closets [3.5 gallons (13L) per flushing cycle].
2. Vegetable sprays.
3. Clinical sinks [4.5 gallons (17 L) per flushing cycle].
4. Service sinks.
5. Emergency showers.

TABLE 604.4 MAXIMUM FLOW RATES AND CONSUMPTION FOR PLUMBING FIXTURES, FIXTURE FITTINGS AND APPLIANCES

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE (b)
Lavatory, private	1.5 gpm at 60 psi
Lavatory, public, (metering)	0.25 gallon per metering cycle
Lavatory, public (other than metering)	0.5 gpm at 60 psi
Shower head (a)	1.5 gpm at 80 psi
Sink faucet	1.5 gpm at 60 psi
Urinal	>>Waterless or 0.5 gallon per flushing cycle
Water closet	1.28 gallons per flushing cycle

Dishwasher (residential)	6.5 gallons per cycle or less (Energy Star/Water Sense Certified) (c)
Dishwasher (commercial)	Less than 1.2 gallons per rack for fill and dump machines and less than 0.9 gallons per rack for all other types of machines
Dishwasher (under the counter machines)	1.0 gallon or less per rack for high-temperature machines and 1.7 gallons per rack for low-temperature machines
Washing machine	Water factor of 8 or lower (Energy Star/Water Sense Certified) (c)

For SI:
1 gallon = 3.785 L
1 gallon per minute = 3.785 L/m
1 pound per square inch = 6.895 kPa.

(a) A hand-held shower spray is a shower head.

(b) Consumption tolerances shall be determined from referenced standards.

(c) Water factor in gallons per cycle per cubic foot.

P2906.2, Florida Building Code, Residential

The City hereby adopts the following local technical amendments to Chapter 29 (Residential) of the Florida Building Code.

P2903.2 Maximum flow and water consumption.

The maximum water consumption flow rates and quantities for all plumbing fixtures, fixture, fittings and appliances shall be in accordance with Table P2903.2a. Effective July 1, 2021, permit applications for all residential and commercial new construction and renovations shall include high efficiency plumbing fixtures, fixture fittings and appliances as provided in Table P2903.2a. Such high efficiency plumbing fixtures, fixture fittings and appliances shall comply with the specifications in Table P2903.2a or have received the U.S. Environmental Protection Agency (EPA) WaterSense Label.

TABLE P2903.2a

MAXIMUM FLOW RATES AND CONSUMPTION FOR PLUMBING FIXTURES, FIXTURE FITTINGS AND APPLIANCES PLUMBING FIXTURE OR FIXTURE FITTING

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE (b)
Lavatory faucet	1.5 gpm at 60 psi
Shower head (a)	1.5 gpm at 80 psi
Sink faucet	1.5 gpm at 60 psi
Water closet	1.28 gallons per flushing cycle
Dishwasher (residential)	6.5 gallons per cycle or less (Energy Star/Water Sense Certified) (c)
Washing machine	Water factor of 8 or lower (Energy Star/Water Sense Certified) (c)

For SI:

1 gallon = 3.785 L
1 gallon per minute = 3.785 L/m
1 pound per square inch = 6.895 kPa.

(a) A handheld shower spray is a showerhead.

(b) Consumption tolerances shall be determined from referenced standards.

(c) Water factor in gallons per cycle per cubic foot.

~~Sec. 108-958. Year-Round Landscape Irrigation Conservation Measures~~

Refer ino108 9457

Section 4. YEAR-ROUND LANDSCAPE IRRIGATION CONSERVATION MEASURES
The [County/City] adopts the rules of the South Florida Water Management District, listed in Subsection 40E-24.201 (1)-(6), F.A.C., including subsequent additions or corrections which are set out as follows:

(1) The year-round landscape irrigation conservation measures contained in this Ordinance are applicable to all users including permitted and exempt users under Chapter 40E-2, F.A.C., unless otherwise indicated. These conservation measures apply to all water resources, unless otherwise indicated. In addition to the requirements of this Section, all permitted users under Chapter 40E-2, F.A.C., are required to maintain compliance with all CUP conditions and terms, including requirements to implement water conservation practices.

(2) It shall be the duty of each user to keep informed as to the landscape irrigation conservation measures within this Ordinance which affect each particular water use.

(3) In addition to the specific conservation measures, all wasteful and unnecessary water use, as defined in Section 2(17), is prohibited.

(4) The following requirements shall apply to all users, unless specified in Section 3 or Section 5.

(a) Landscape irrigation shall be prohibited between the hours of 10:00 a.m. and 4:00 p.m., except as otherwise provided.

(b) Irrigation of existing landscaping shall comply with the following provisions:

i. Even addresses, as defined in Section 2(5), installations with irrigation systems that irrigate both even and odd addresses within the same zones, such as multi-family units and homeowners' associations, and rights-of-way or other locations with no address shall have the opportunity to accomplish necessary landscape irrigation two (2) days a week, only on Thursday and/or Sunday.

ii. Odd addresses, as defined in Section 2(13), shall have the opportunity to accomplish necessary landscape irrigation two (2) days a week, only on Wednesday and/or Saturday.

(c) Irrigation of new landscaping shall comply with the following provisions:

i. New landscaping may be irrigated once on the day it is installed without regard to the listed watering days and times. Irrigation of the soil immediately prior to the installation of the new landscaping is allowed without regard to the normal watering days and times.

ii. A ninety (90) day establishment period begins on the day the new landscaping is installed. The new landscaping shall be installed within a reasonable time from the date of purchase, which may be demonstrated with a dated receipt or invoice.

iii. Irrigation of new landscaping which has been in place for thirty (30) days or less may be accomplished on Monday, Tuesday, Wednesday, Thursday, Saturday, and/or Sunday.

iv. Irrigation of new landscaping which has been in place for thirty-one (31) to ninety (90) days may be accomplished on Monday, Wednesday, Thursday, and/or Saturday.

v. Irrigation of new landscaping is limited to areas only containing the new landscaping. An entire zone of an irrigation system shall only be utilized for landscape irrigation under this Subsection if the zone contains at least 50% new landscaping. If a zone contains less than 50% new landscaping, or if the new landscaping is in an area that will not typically be irrigated by an irrigation system, only the individual new plantings are eligible for additional irrigation. Targeted watering may be accomplished by low volume hand watering, as defined in Section 2(10), or any appropriate method which isolates and waters only the new landscaping.

(5) Any water shortage, as defined in Section 2(19), restrictions or other measures declared pursuant to Chapter 40E-21, F.A.C., or related District Governing Board or Executive Director orders which are more restrictive than a measure contained within this Ordinance, shall supersede this Ordinance for the duration of the applicable water shortage declaration.

Section 5. EXCEPTIONS TO THE LANDSCAPE IRRIGATION SCHEDULES
Landscape irrigation scheduling shall be subject to the following exceptions:

(1) Landscape irrigation systems may be operated during restricted days and/or times for cleaning, maintenance, and repair purposes with an attendant on site in the area being tested. Landscape irrigation systems may routinely be operated for such purposes no more than once per week, and the run time for any one (1) test should not exceed ten (10) minutes per zone.

(2) Landscape irrigation for the purpose of watering-in fertilizers, insecticides, pesticides, fungicides and herbicides, where such watering-in is recommended by the manufacturer, or by federal, state or local law, or best management practices, shall be allowed under the following conditions:

(a) Such watering-in shall be limited to one (1) application, unless the need for more than one (1) application is stated in the directions for application specified by the manufacturer; and

(b) Such watering-in shall be accomplished during normally allowable watering days and times set forth in Subsection 4(4)(a) and (b), unless a professional licensed applicator has posted a temporary sign containing the date of application and the date(s) of needed watering-in activity.

(3) Any plant material may be watered using low volume irrigation, as defined in Section 2(11), micro-irrigation, as defined in Section 2(12), low volume hand watering method, rain barrels, cisterns, or other similar rain-harvesting devices without regard to the watering days or times allowed pursuant to this Section.

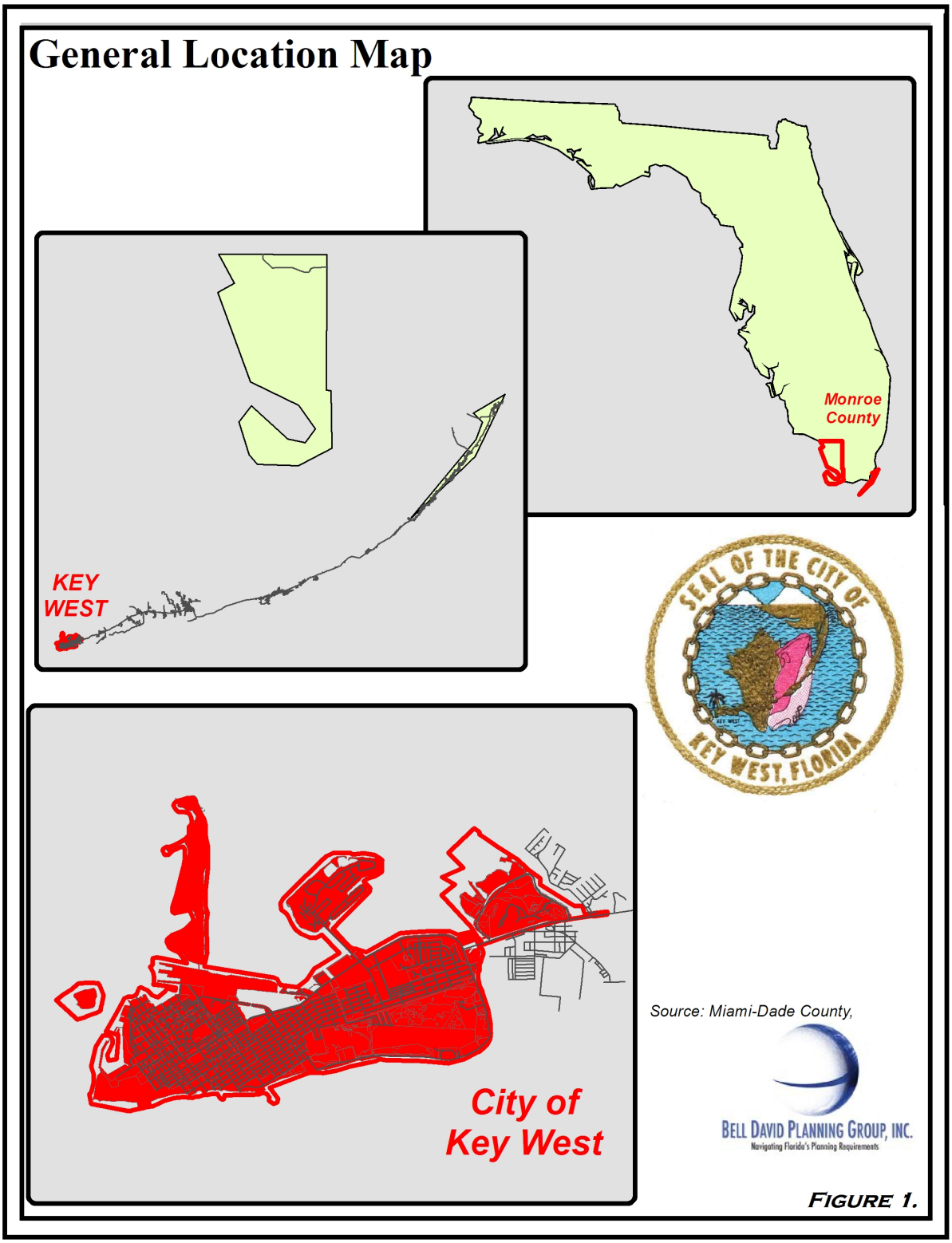
7.0 REFERENCES

- Florida Keys Aqueduct Authority, 20-Year Water System Capital Improvement Plan, December 2006.
- Florida Keys Aqueduct Authority, Annual Water Demand Update through 2030
- Florida Keys Aqueduct Authority, Annual Water Demand Update by Municipal Boundary
- Florida Keys Aqueduct Authority, Projected 5-Year Capital Improvement Plan
- Keith and Schnars, P.A. and Fishkind and Associates, Monroe County 2010-2030 Population Projections, March 15, 2011
- Monroe County Growth Management, Monroe County 2030 Comprehensive Plan
- South Florida Water Management District, Lower East Coast Water Supply Plan Update, November 8, 2018
- Southeast Florida Regional Climate Change Compact, Integrating Climate Change & Water Supply Planning in Southeast Florida, June 10, 2014
- Southeast Florida Regional Climate Change Compact, A Unified Sea Level Rise Projection for Southeast Florida, October 2020.

8.0 EXHIBITS

Exhibit A – Maps

Exhibit B = Section 7.2 of the Florida Keys Aqueduct Authority 20-Year Water System Capital Improvement Master Plan, December 2006. Will update as soon as they provide final copy.


General Location Map
Monroe County
KEY WEST
SEAL OF THE CITY OF KEY WEST, FLORIDA
City of Key West
Source: Miami-Dade County,
BELL DAVID PLANNING GROUP, INC.
Navigating Florida's Planning Requirements
FIGURE 1.

Florida Keys Aqueduct Authority Planning Area

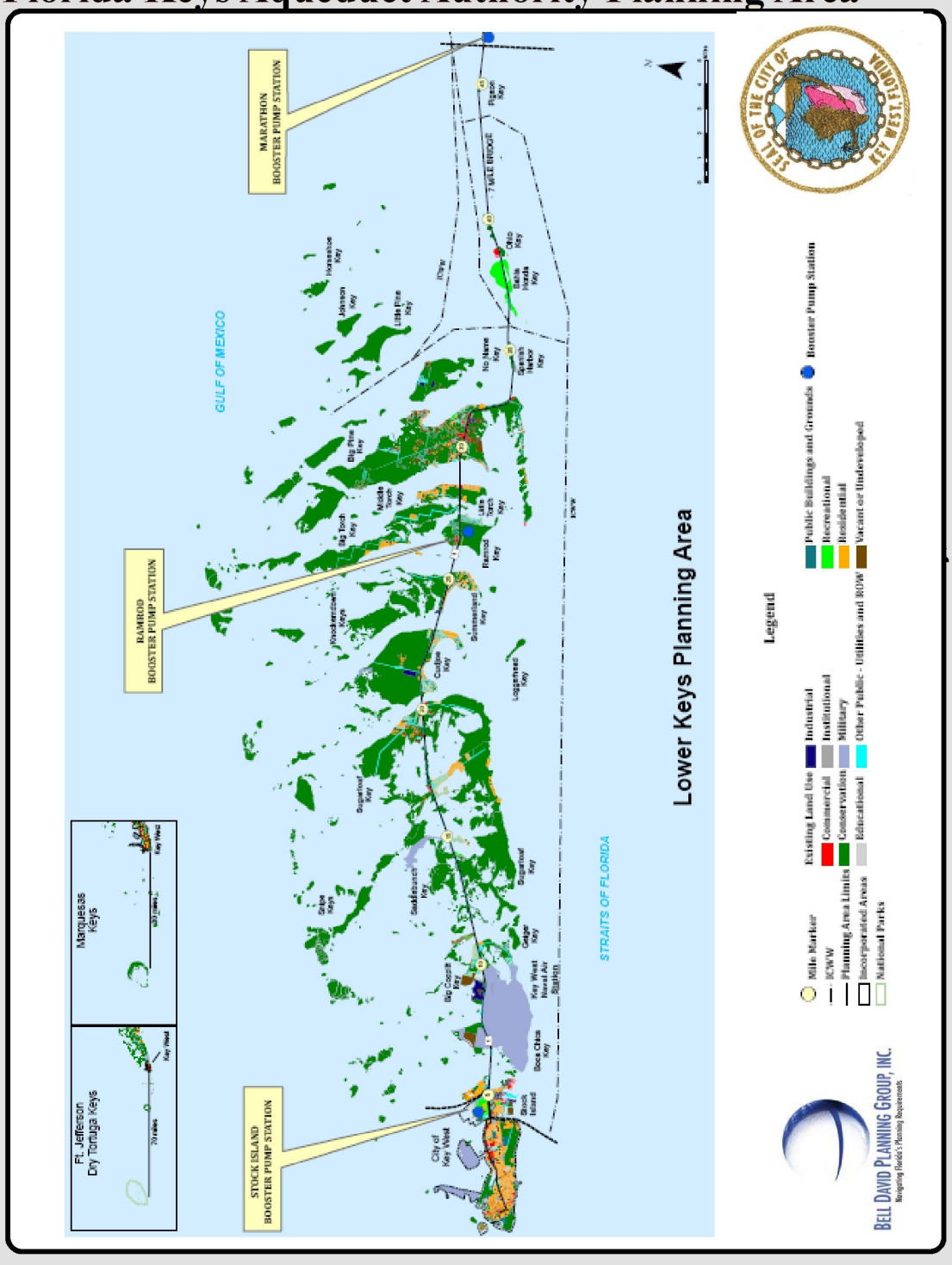


FIGURE 2A.

Florida Keys Aqueduct Authority Planning Area

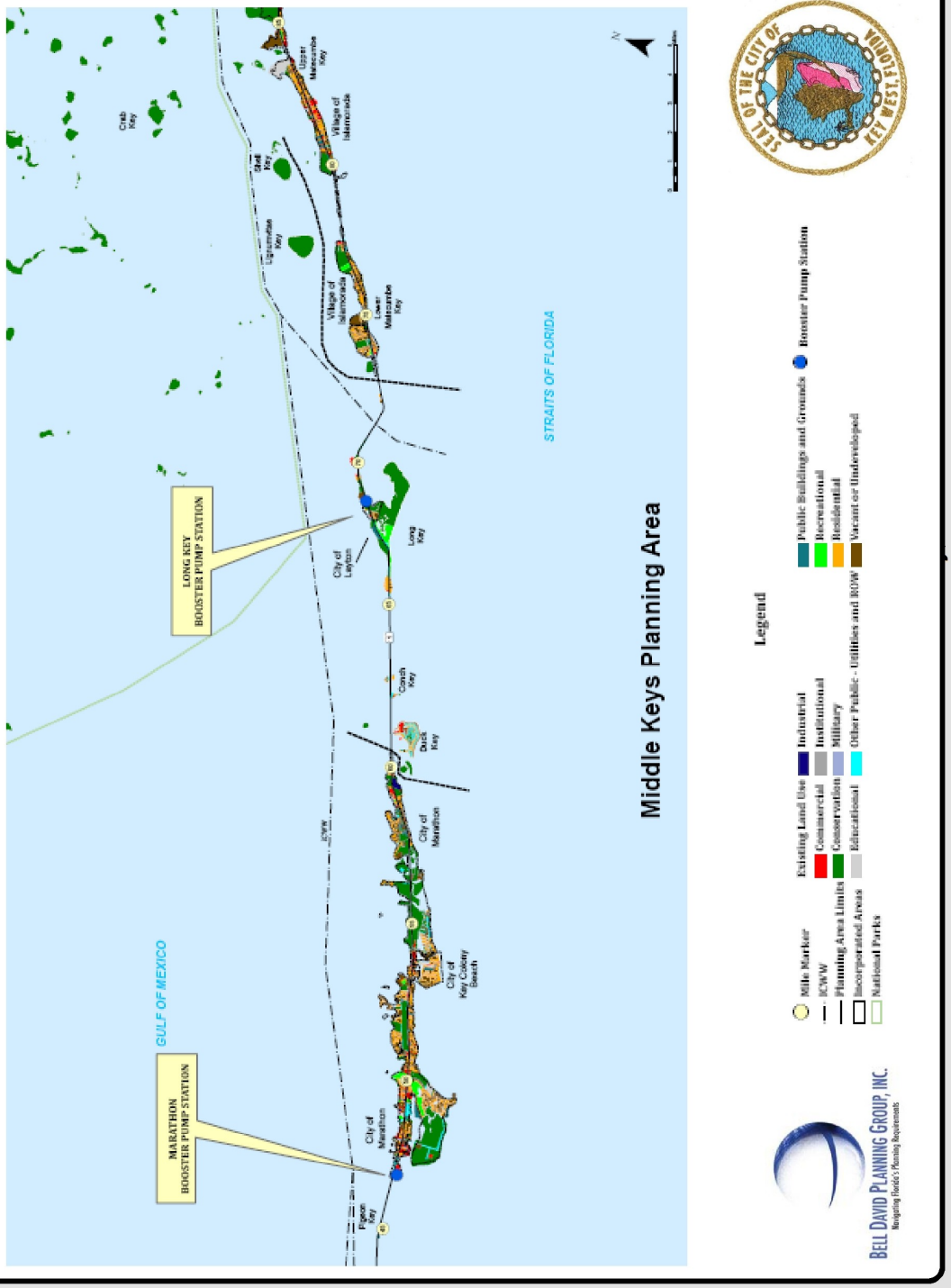


FIGURE 2B.

Florida Keys Aqueduct Authority Planning Area

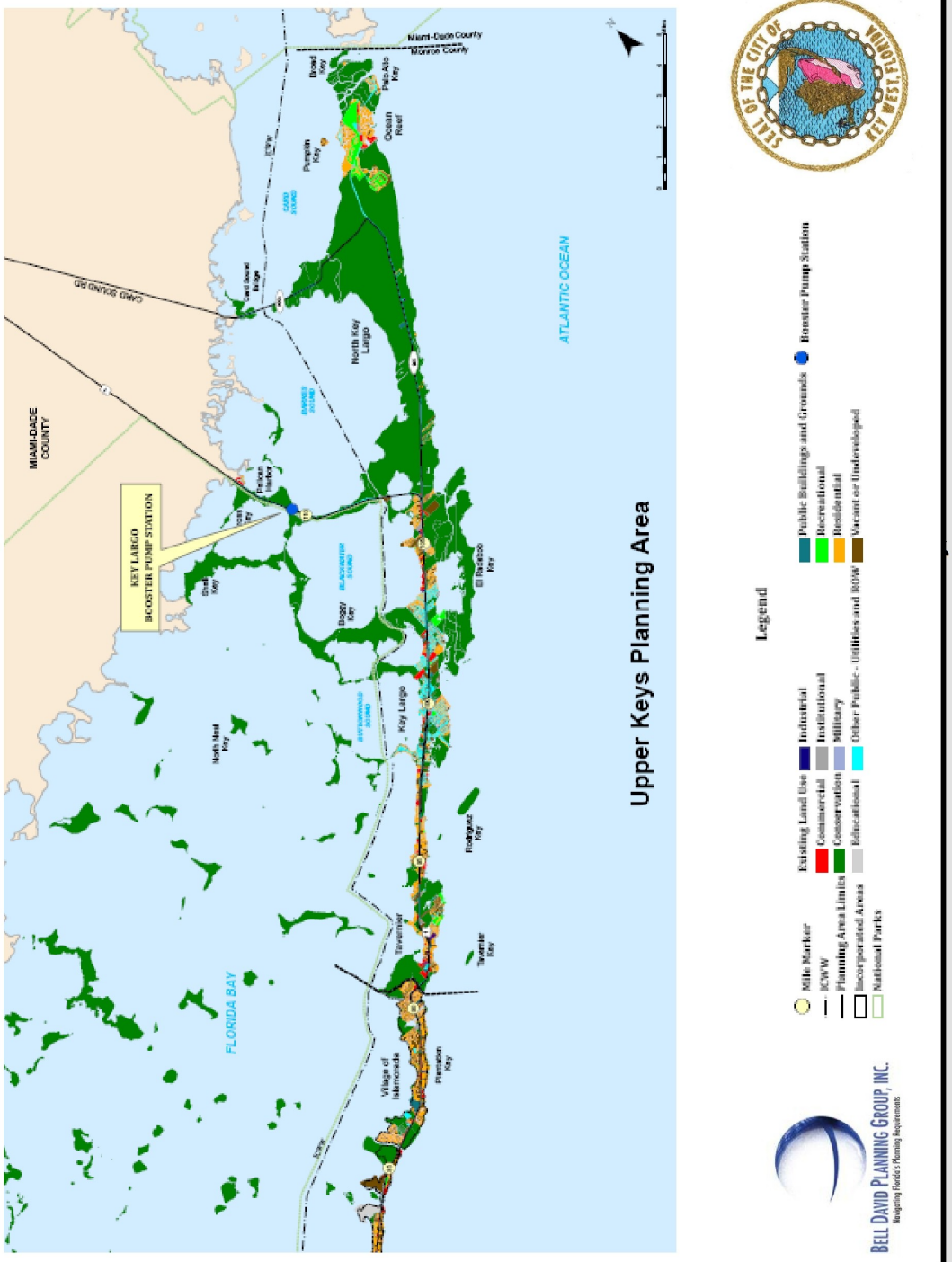


FIGURE 2C.

Florida Keys Aqueduct Authority Planning Area

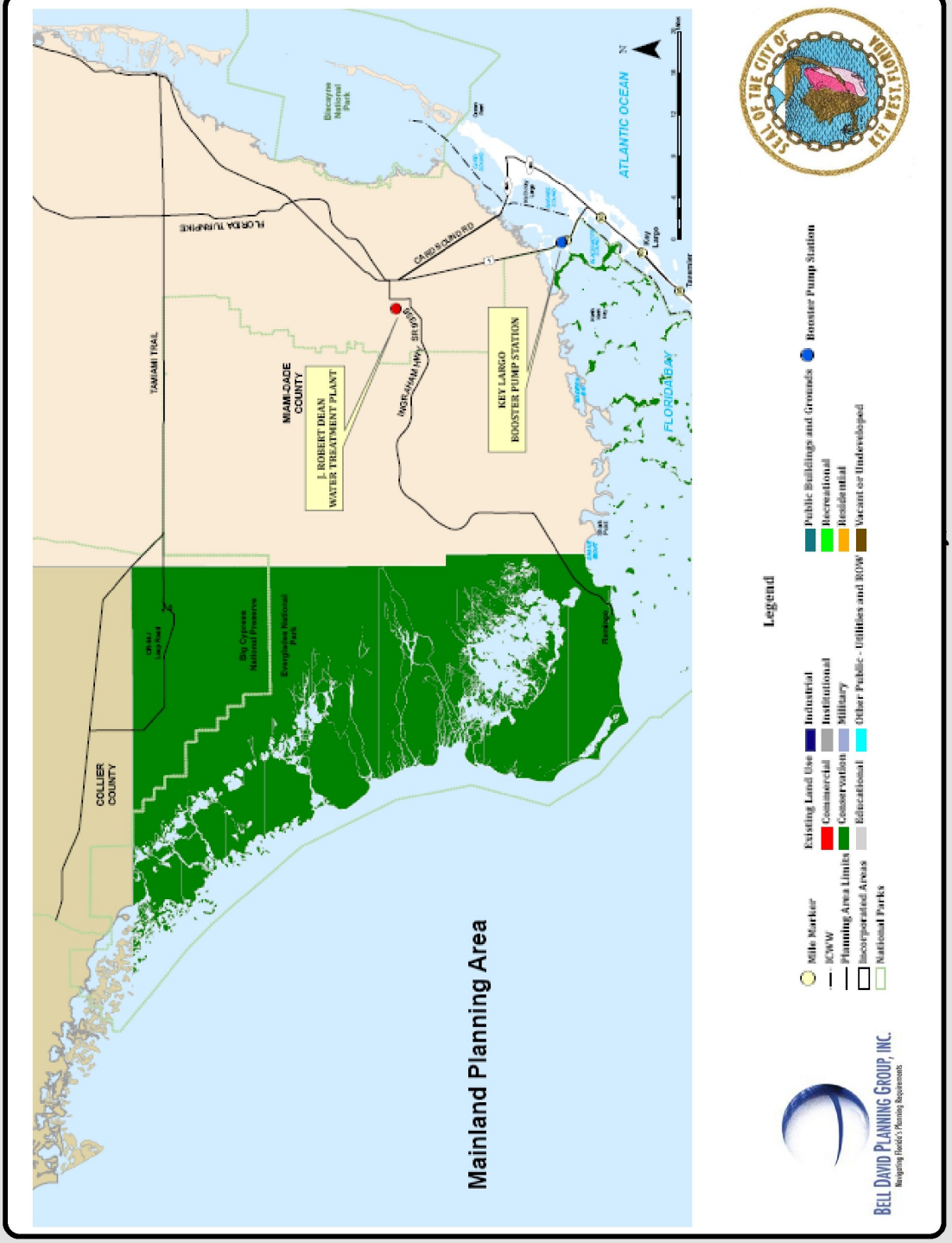


FIGURE 2D.

Water Service Area

FIGURE 3.

Wellfield Cones of Influence

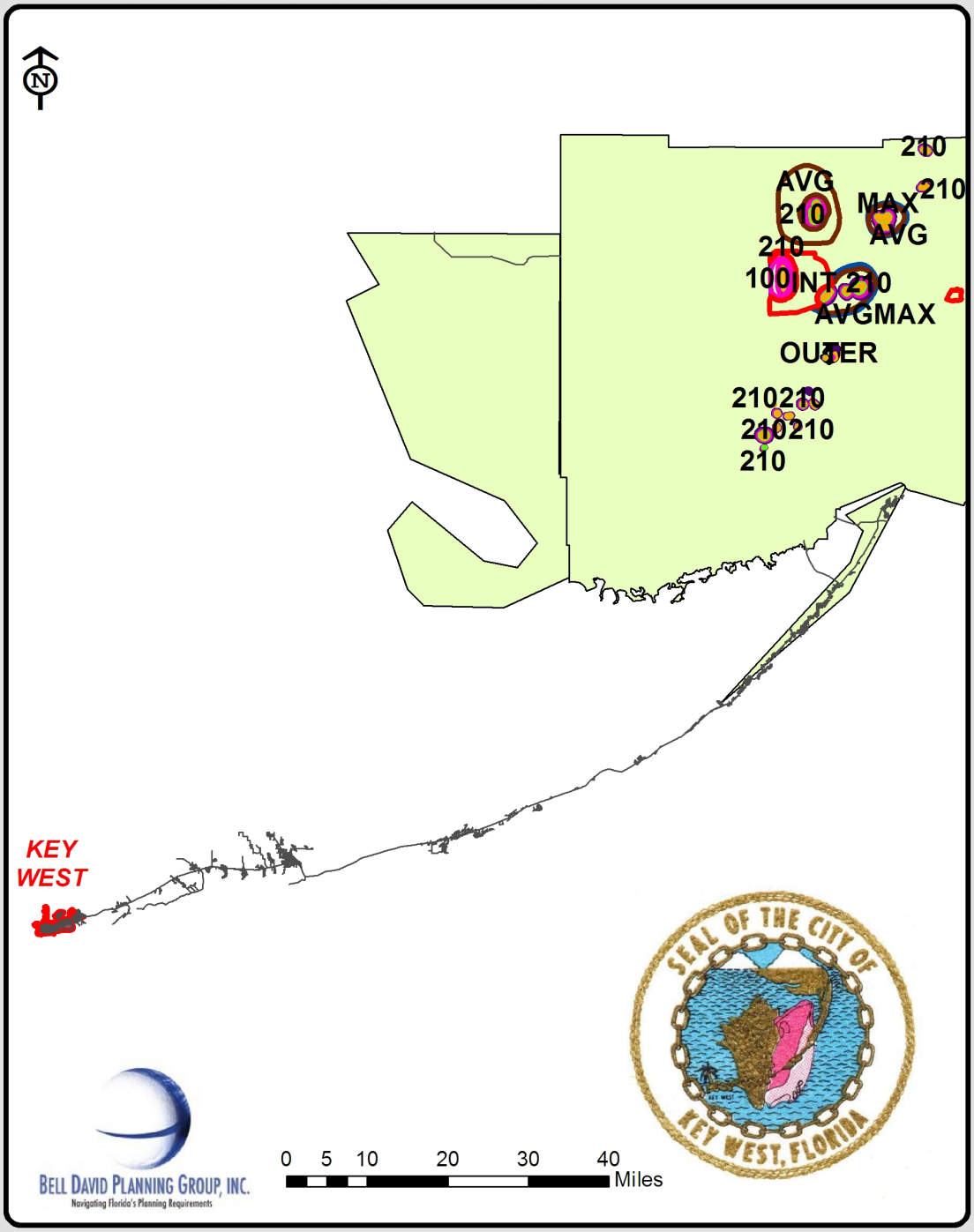


FIGURE 4.