

Sponsored by: Garrett
Introduction Date: April 13, 2021
Public Hearing Date: April 13, 2021
January 11, 2022
Enactment date: January 11, 2022

**CITY OF MARATHON, FLORIDA
ORDINANCE 2021-10**

AN ORDINANCE OF THE CITY OF MARATHON, FLORIDA APPROVING THE CITY'S "10-YEAR WATER SUPPLY FACILITIES WORK PLAN" AS REQUIRED BY THE STATE DEPARTMENT OF ECONOMIC OPPORTUNITY UNDER CHAPTER 163, PART II, F. S.; TO INCLUDE UPDATED WATER DEMAND PROJECTIONS, IDENTIFY ALTERNATIVE AND TRADITIONAL WATER SUPPLY PROJECTS, AND DESCRIBE CONSERVATION AND REUSE ACTIVITIES NEEDED TO MEET THE PROJECTED FUTURE DEMANDS. PLANNING TOOLS ARE AVAILABLE ON THE DISTRICT'S WEBSITE FOR YOUR USE AND DISTRICT STAFF ARE AVAILABLE TO PROVIDE TECHNICAL ASSISTANCE TO UPDATE THE WORK PLAN, INCLUDING REVIEWING DRAFT WORK PLANS PRIOR TO FORMAL PLAN AMENDMENT SUBMITTAL; PROVIDING FOR SEVERABILITY; PROVIDING FOR REPEAL OF CONFLICTING PROVISIONS; PROVIDING FOR TRANSMITTAL OF THIS ORDINANCE TO THE STATE DEPARTMENT OF ECONOMIC OPPORTUNITY; AND PROVIDING FOR AN EFFECTIVE DATE UPON THE APPROVAL OF THIS ORDINANCE BY THE STATE DEPARTMENT OF ECONOMIC OPPORTUNITY.

WHEREAS, the City of Marathon recognizes the vital role of fresh water in perpetuating human habitation; and

WHEREAS, the City of Marathon receives all of its fresh water resources through the Florida Keys Aqueduct Authority (FKAA); and

WHEREAS, the City of Marathon recognizes the importance of the management, protection, and conservation of all water resources within its boundaries; and

WHEREAS, the proposed plan will provide additional support, in accordance with federal guidelines and regulations, ensuring that its citizens and businesses will be allowed continued use, enjoyment, and benefits from the water resources within the City of Marathon; and

WHEREAS, the proposed ordinance will provide the opportunity for the City to come into compliance with statutory mandate,

NOW, THEREFORE, BE IT ORDAINED BY THE CITY COUNCIL OF THE CITY OF MARATHON, FLORIDA, AS FOLLOWS:

Section 1. The above recitals are true, correct, and incorporated herein by this reference.

Section 2. Council hereby approves and adopts the City of Marathon, Florida 10-Year Water Supply Facilities Work Plan as a stand-alone addendum to the City of Marathon Comprehensive Plan and the following policies as enumerated, renumbering existing objectives and policies accordingly:

Additions to existing text are shown by underline, changes to existing text on second reading are shown by double underline, and deletions are shown as ~~strikethrough~~.

Policy 3-5.1.2: Interlocal Agreement with FKAA to Identify the Availability of Water Supply to Serve Existing and New Development.

By December 31, ~~2014~~ 2022 the City of Marathon shall enter into an interlocal agreement with the Florida Keys Aqueduct Authority to formulate a mechanism that will allow the FKAA and the City to identify the availability of water supply needed to serve existing and new development within the City, monitor the use of potable water, and implement such alternative water supply projects, traditional water supply projects, conservation projects and reuse necessary to meet the City's water supply needs.

Policy 3-5.5.5 Encourage Use of Rainwater

The City shall permit and encourage rainwater storage facilities for all household uses such as but not limited to, irrigation, car, patio, and boat washing. [~~§163.3177(6)(c).~~, F.S.]

Objective 3-5.6 Ensure Adequate Water Pressures For Fire Protection

The City shall continue to coordinate with FKAA to ensure adequate capacity is available to provide for fire flows for protection of the public health, welfare and safety. [~~§163.3177(3)(a)3.~~, F.S.]

Policy 3-5.6.1 Coordinate with FKAA to Ensure Fire Flows

The City shall coordinate with the FKAA, in accordance with its Capital Improvements Program, to continue upgrading the distribution system toward the goal of providing fire flow capabilities throughout Marathon as funds and land are available. Fire flows shall meet the provisions of the Florida Fire Prevention Code.

Policy 3-5.6.2 Fire Flow LOS

The City shall require that at the time a construction permit is issued, adequate fire flow is supplied to the site in accordance with the Florida Fire Prevention Code.

Policy 5-1.1.12 Water Supply Compatibility

The City, shall continue to coordinate with the County and Cities of Layton, Key Colony Beach, Key West, the Village of Islamorada, and FKAA as necessary to facilitate system-wide compatibility on such potable water-related issues as potable water levels of service, consumption projections, water conservation programs, and emergency management.

Policy 5-1.1.13 Energy and Climate Plans

The City, shall continue to coordinate with the County and Cities of Layton, Key Colony Beach, Key West, the Village of Islamorada, FKAA, and other South East Florida Regional Compact Climate Change partners as necessary to facilitate compatibility on such energy and climate related issues (including but not limited to, emergency management, flood risk, storm surge, threats to potable water supply, the potential for changing habitat and landscapes, the need for shoreline stabilization and the potential impacts to infrastructure necessary to serve proposed uses).

Section 3. The provisions of the City of Marathon Comprehensive Plan and all ordinances or parts of ordinances in conflict with the provisions of this Ordinance are hereby repealed for the term of this Ordinance.

Section 4. The provisions of this Ordinance are declared to be severable, and if any sentence, section, clause or phrase of this Ordinance shall, for any reason, be held to be invalid or unconstitutional, such decision shall not affect the validity of the remaining sentences, sections, clauses or phrases of the Ordinance, but they shall remain in effect it being the legislative intent that this Ordinance shall stand notwithstanding the invalidity of any part.

Section 5. The provisions of this Ordinance constitute a “land development regulation” as state law defines that term. Accordingly, the City Clerk is authorized and directed to forward a copy of this Ordinance to the State Department of Economic Opportunity for approval pursuant to Sections 380.05(6) and (11), Florida Statutes.

Section 6. This Ordinance shall be effective immediately upon approval by the State Department of Economic Opportunity pursuant to Chapter 380, Florida Statutes.

PASSED AND ADOPTED ON SECOND READING THIS 11TH DAY OF JANUARY, 2022.

THE CITY OF MARATHON, FLORIDA



John Bartus, Mayor

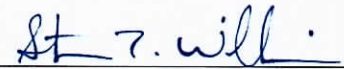
AYES: Zieg, Cook, Gonzalez, Bartus
NOES: None
ABSENT: None
ABSTAIN: None

ATTEST:



Diane Clavier, City Clerk

**APPROVED AS TO FORM AND LEGAL SUFFICIENCY FOR THE USE
AND RELIANCE OF THE CITY OF MARATHON, FLORIDA ONLY:**



Steven T. Williams, City Attorney

CITY OF MARATHON, FLORIDA



10-YEAR WATER SUPPLY FACILITIES WORK PLAN

Prepared By:

City of Marathon Planning Department

March 2024
January 2022

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1.0 INTRODUCTION

The purpose of the City of Marathon Water Supply Facilities Work Plan (the “Work Plan”) is to identify and plan for the water supply sources and facilities needed to serve existing and new development within Marathon’s jurisdiction. Chapter 163, Part II, F.S., requires local governments to prepare and adopt Work Plans into their comprehensive plans within 18 months after the water management district approves a regional water supply plan or its update. The *Lower East Coast Water Supply Plan Update* was approved by the South Florida Water Management District (SFWMD) on November 8, 2018.

Residents of the City of Marathon 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 Marathon’s Work Plan will reference 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 (the “Master Plan”) since Marathon is a retail buyer and the FKAA is the sole provider of water to the City. According to state guidelines, the Work Plan and the comprehensive plan amendments must address the development of traditional and alternative water supplies, bulk sales agreements, conservation and reuse programs and concurrency issues that are necessary to serve existing and new development for at least a 10-year planning period. The Marathon Work Plan will address a 10-year planning period and identify projects from the FKAA Work Plan consistent with this planning period.

The City’s Work Plan is divided into six sections:

- Section 1 – Introduction
- Section 2 – Background Information
- Section 3 – Data and Analysis
- Section 4 – Work Plan Projects/Capital Improvement Element/Schedule (FKAA)
- Section 5 – Goals, Objectives, and Policies
- Section 6 – Regional Issues Identified in Regional Water Supply Plans

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 the local land

use planning and water supply planning.

1.2 Statutory Requirements

Each local government must comply with the following requirements:

1. Coordinate appropriate aspects of its comprehensive plan with the SFWMD's *Lower East Coast Water Supply Plan*, [163.3177(4)(a), F.S.]
2. Ensure that the Comprehensive Plan is based upon availability of adequate water supplies and public facilities and services [s.163.3177(6)(a), F.S., effective July 1, 2005]. Data and analysis demonstrating that adequate water supplies and associated public facilities will be available to meet projected growth demands must accompany all proposed Future Land Use Map amendments submitted to the Department for review. The submitted package must also include an amendment to the Capital Improvements Element, if necessary, to demonstrate that adequate public facilities will be available to serve the proposed Future Land Use Map modification.
3. Ensure that adequate water supplies and facilities are available to serve new development no later than the date on which the City of Marathon anticipates issuing a certificate of occupancy and consult with the applicable water supplier prior to approving building permits, to determine whether adequate water supplies will be available to serve the development by the anticipated issuance date of the certificate of occupancy [s.163.3180 (2)(a), 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 regional water supply plan, or the alternative project proposed by the local government under s. 373.0361(7), F.S. [s. 163.3177(6)(c), F.S.];
 - b. Identify the traditional and alternative water supply projects, bulk sales agreements, and the conservation and reuse programs necessary to meet current and future water use demands within the local government's jurisdiction [s. 163.3177(6)(c), F.S.]; and
 - c. Include a water supply facility work plan for at least a 10-year planning period for constructing the public, private, and regional water supply facilities identified in the element as necessary to serve existing and new development. [s. 163.3177(6)(c), F.S.] Amendments to incorporate the water supply facilities work plan into the comprehensive plan are exempt from the twice-a-year amendment limitation. [s. 163.3177(6)(c), 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 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 SFWMD's *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.]

If the established planning period of a comprehensive plan is greater than ten years, the plan must address the water supply sources necessary to meet and achieve the existing and projected water use demand for established planning period, considering the appropriate regional water supply plan. [s.163.3167 (13), F.S.]

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

2.0 BACKGROUND INFORMATION

2.1 Overview

The City of Marathon was incorporated in 1999, making it the fifth municipality established in Monroe County. The islands of Marathon are Boot Key, Knight Key, Hog Key, Vaca Key, Stirrup Key, Crawl and Little Crawl Key, East and West Sister's Island, Deer Key and Fat Deer Key, Long Point Key and Grassy Key. The current permanent population estimate is ~~8,297~~ 9,689 residents based on the Census ~~2020~~²⁰¹⁰ data. The 2020 estimate from the Bureau of Economic and Business Research (BEBR) is a population of 9,097 residents. The City of Marathon has a significant "seasonal visitor population", with the Comprehensive Plan estimating 5,386 seasonal visitors for 2020. All of these population segments will utilize the City's potable water resources. The combined amount of all population segments represents the "functional population" of the City that will create a demand for water usage. For this Plan, the functional population value is used in all per capita calculations and estimates.

The City of Marathon has a Building Permit Allocation System (BPAS) that limits new residential growth to 30 new units per year. The potential expansion of the

City's current boundaries through annexations is possible, but not likely. Based upon the MOU with the State, the 30 new units a year are to be granted until 2023. Additionally, 300 units were allocated for early evacuation affordable units to the City of Marathon. The hurricane evacuation modeling has yet to be completed with the new census and other relevant data. As such the growth is not projected to dramatically increase post 2023. However, projection of 150 new units every 5 years is used based upon previous MOU allocations.

Tables 1, 2 and 3 show the City's permanent, seasonal, and functional population projections through 202030.

TABLE 1:

Population Estimates and Projections, 2000 – 202030

<i>Year</i>	<i>Total Units</i>	<i>Occupied Units</i>	<i>Persons Per Occupied Unit</i>	<i>Population</i>
2000	6,791	4,597	2.19	10,067
2005	6,941	4,692	2.19	10,275
2010	6,187	3,718	2.23	8,297
2015	6,311	3,850	2.20	8,463
2020	6,437 <u>6,261</u>	3,927 <u>4,208</u>	2.30 <u>2.0</u>	8,632 <u>9,689</u>
<u>2025</u>	<u>6,711</u>	<u>4,510</u>	<u>2.30</u>	<u>10,373</u>
<u>2030</u>	<u>6,861</u>	<u>4,611</u>	<u>2.30</u>	<u>10,605</u>

Source: City of Marathon Comprehensive Plan Data, Inventory, and Analysis; Census 2010 & 2020

TABLE 2:

Seasonal Visitor Population Projections, 2000 - 202030

<i>Year</i>	<i>Units</i>	<i>Occupancy Rate</i>	<i>Person/Unit</i>	<i>Population</i>
2000	2,829	59.7%	2.92	4,931
2005	2,829	59.7%	2.92	4,931
2010	2,913	59.7%	2.92	5,078
2015	3,000	59.7%	2.92	5,229
2020	3,090	59.7%	2.92	5,386
<u>2025</u>	<u>3,181</u>	<u>59.7%</u>	<u>2.92</u>	<u>5,545</u>
<u>2030</u>	<u>3,275</u>	<u>59.7%</u>	<u>2.92</u>	<u>5,709</u>

Source: City of Marathon Comprehensive Plan Data, Inventory, and Analysis; Monroe County Tourism Development Council

TABLE 3:
Functional Population of City and Service Area

<i>Year</i>	<i>Functional Population City</i>	<i>Functional Population Service Area</i>
2000	14,998	153,080
2005	13,541	155,438
2010	13,375	146,581
2015	13,541	148,043
2020	13,861 15,075	149,504
<u>2025</u>	<u>15,918</u>	<u>161,604</u>
<u>2030</u>	<u>16,314</u>	<u>163,956</u>

Source: City of Marathon Comprehensive Plan Data, Inventory, and Analysis; FCAA Master Plan; Census 2010 & 2020

Existing Land Use Profile

The City has no current plans to acquire additional lands through annexation or purchase. Given the geographical constraint of a municipality composed of islands with finite room to accommodate growth, at some point the City will reach build out and the permanent population will cease to show any significant fluctuation. The seasonal population may continue to fluctuate in the future due to economic forces such as the cost of gasoline, airfare, and the ability to maintain a second or third home. The functional population, dependent on the seasonal population will continue to exhibit some change from year to year but will not continue to expand. The existing land use profile below indicates the land use categories and the percentage of gross acreage they utilize.

Existing Land Use Profile

<u>PC Code</u>	<u>Description</u>	<u>Area (Square Feet)</u>	<u>Area (Acres)</u>	<u>Units</u>	<u>Building Size (Square Feet)</u>	<u>Density (DU/Acre)</u>	<u>FAR (SF/SF)</u>
Single-Family							
01	Single-Family	28,616,961	657.0	2,332	n/a	3.5	n/a
Mobile Homes							

02	Mobile Homes	2,920,737	67.1	501	n/a	7.5	n/a
Multi-Family							
03	Multi-family (10 units or more)	649,260	14.9	5	n/a	0.3	n/a
04	Condominium	3,977,718	91.3	1268	n/a	13.9	n/a
05	Timeshare	490,939	11.3	6	n/a	0.5	n/a
08	Multi-family (less than 10 units)	8,752,444	200.9	481	n/a	2.4	n/a
	Subtotal	45,408,059	1042.5	4593	n/a	4.7	n/a
General Commercial							
11	Stores, One Story	1,102,215	25.3	n/a	228,050	n/a	0.2069
12	Mixed Use - Residential / Commercial	1,735,231	39.8	n/a	291,578	n/a	0.1680
13	Department Store	444,312	10.2	n/a	91,738	n/a	0.2065
14	Supermarket	4,951	0.1	n/a	1,704	n/a	0.3441
16	Community Shopping Center	938,120	21.5	n/a	385,075	n/a	0.4105
17	Office Building, One Story	795,035	18.3	n/a	85,322	n/a	0.1073
18	Office Building, Multi Story	124,145	2.8	n/a	34,848	n/a	0.2807
19	Professional Services Building	112,907	2.6	n/a	16,405	n/a	0.1453
21	Restaurant or Cafeteria	511,287	11.7	n/a	61,342	n/a	0.1200
22	Fast Food Drive Thru Restaurant	230,581	5.3	n/a	10,882	n/a	0.0472
23	Financial Institution	516,968	11.9	n/a	49,047	n/a	0.0949
25	Repair Shop (Not Automotive)	153,915	3.5	n/a	28,148	n/a	0.1829
26	Gas Station / Convenience Store	306,193	7.0	n/a	28,076	n/a	0.0917
27	Marinas	2,496,192	57.3	n/a	215,307	n/a	0.0863
29	Wholesale Outlet	285,051	6.5	n/a	42,067	n/a	0.1476
30	Florist or Greenhouse	6,771	0.2	n/a	706	n/a	0.1043
33	Nightclub or Lounge or Bar	28,428	0.7	n/a	15,255	n/a	0.5366
	Subtotal	9,792,301	225	n/a	1,585,550	n/a	0.1619
Commercial Fishing							
44	Packing Plant, Seafood Etc.	156,212	3.6	n/a	14,291	n/a	0.0915
Tourist Commercial							

36	MH Parks, Private Camping, Rec. Parks	4,958,469.8	113.8	n/a	98,156	n/a	0.0198
39	Hotel or Motel	4,339,251	99.6	n/a	514,790	n/a	0.1186
	Subtotal	9,297,721	213.4	n/a	612,946	n/a	0.0659
Industrial							
41	Light Manufacturing	59,281	1.4	n/a	16,993	n/a	0.2867
42	Heavy Industrial	81,602	1.9	n/a	4,186	n/a	0.0513
43	Lumber Yard	35,252	0.8	n/a	10,500	n/a	0.2979
46	Other Food Processing	210,238	4.8	n/a	19,929	n/a	0.0948
47	Gravel Pit	1,961,060	45.0	n/a	3,200	n/a	0.0016
48	Warehousing	430,982	9.9	n/a	117,353	n/a	0.2723
49	Open Storage	70,841	1.6	n/a	2,412	n/a	0.0340
	Subtotal	2,849,257	65	n/a	174,573	n/a	0.0613
Education							
72	Private School or College / Research Center	78,392	1.8	n/a	13,941	n/a	0.1778
84	Public College	371,928	8.5	n/a	-	n/a	0.0000
83	Public School	1,936,589	44.5	n/a	226,274	n/a	0.1168
	Subtotal	2,386,908	54.8	n/a	240,215	n/a	0.1006
Institutional							
71	Church	1,159,277	26.6	n/a	107,605	n/a	0.0928
73	Private Hospital	322,857	7.4	n/a	28,826	n/a	0.0893
74	Nursing Home	155,142	3.6	n/a	22,434	n/a	0.1446
76	Mortuary or Cemetery	14,821	0.3	n/a	4,560	n/a	0.3077
77	Club or Lodge	3,609,006	82.9	n/a	91,828	n/a	0.0254
85	Public Hospital	212,463	4.9	n/a	62,467	n/a	0.2940
	Subtotal	5,473,568	125.7	n/a	317,720	n/a	0.0580
Public Buildings/Grounds/Facilities							
86	County (other than PC List)	18,152,665	416.7	n/a	350,256	n/a	0.0193
87	State (other than PC List)	26,310,450	604.0	n/a	75,943	n/a	0.0029
88	Federal (other than PC List)			n/a		n/a	0.0010

	List)	6,118,458	140.5		6,314		
89	Municipal (other than PC List)	6,582,639	151.1	n/a	19,893	n/a	0.0030
91	Utilities	1,682,785	38.6	n/a	67,984	n/a	0.0404
94	Right of Way	4,960,710	113.9	n/a	n/a	n/a	n/a
	Subtotal	63,807,707	1,464.8	n/a	520,390	n/a	0.0082
Military							
81	Military	243,588	5.6	n/a	14,465	n/a	0.0594
Recreation							
38	Golf Course	2,523,868	57.9	n/a	n/a	n/a	n/a
92	Private Park	1,020	0.0	n/a	n/a	n/a	n/a
	Subtotal	2,524,888	58	n/a	n/a	n/a	n/a
Conservation							
82	US Mainland Forest, Parks, Rec Area	1,663,142	38.2	n/a	2,784	n/a	0.0017
99	Nature Conservancy, Fl Keys Land Trust	3,917,739	89.9	n/a	10,282	n/a	0.0026
	Subtotal	5,580,881	941.8		13,066		0.0003
Vacant							
00	Vacant Residential	57,413,345	1,318.0	n/a	n/a	n/a	n/a
10	Vacant Commercial	8,913,931	204.6	n/a	n/a	n/a	n/a
70	Vacant Institutional	126,956	2.9	n/a	n/a	n/a	n/a
	Subtotal	66,454,232	1,525.6	n/a	n/a	n/a	n/a
	TOTAL	213,975,322	4,912.2				
Submerged							
95	Submerged Land	35,444,852	813.7	n/a	n/a	n/a	n/a
	TOTAL	249,420,173	5,725.9	n/a	n/a	n/a	n/a

Source: City Comprehensive Plan Data, Inventory, and Analysis – Future Land Use Section

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. 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 and mandates the development of alternative water supplies and an increase in the use of conservation and reuse techniques.

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 SAS 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.

Detailed information on the regional issues can be found in Chapter 7, Water Supply Source Options, of the 2018 Lower East Coast Water Supply Plan Update. However, the water supply issues are numbered as followed, with impacts/policies bulleted underneath:

1. Fresh surface water and groundwater are limited; further withdrawals could have impacts on the regional system, wetlands, pollution, existing legal uses, and saltwater intrusion. As a result, additional conservation measures and alternative water supplies need to be developed.

- Conservation matters are addressed in 3.7 of this work plan. The City will look into further conservation measures including but not limited to visitor education programs, Florida Water Star certification, and WaterSense® plumbing fixtures.

2. Surface water and groundwater allocations are limited due to the following Restricted Allocation Area (RAA) rules and Minimum Flows and Minimum Water Levels (MFLs): Lake Okeechobee Service Area (surface water only), North Palm Beach County/Loxahatchee River Watershed Waterbodies, and Lower East Coast Everglades Waterbodies.

- Does not specifically apply to Marathon. However, the City has passed resolutions in support of Everglades restoration projects that restore essential water flow and enhance water storage to the Florida Bay, all necessary to protect the ecological health of the Florida Bay, a critical part of the everglades ecosystem and the Florida Keys National Marine Sanctuary.

3. 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.

- Does not specifically apply to Marathon.

4. Expanded use of reclaimed water is necessary to meet future water supply demands and the Ocean Outfall Law [Section 403.086(9), Florida Statutes].

- Water Reuse matters are addressed in 3.8 of this work plan.
5. Expanded use of brackish groundwater from the Floridan aquifer system requires careful planning and wellfield management to minimize drawdowns and prevent undesirable changes in water quality.
- This is directly addressed in Appendix C of the FKAA plan. Based upon the water quality documentation, the pumping of the Floridan Aquifer well at the rates indicated do not appear to induce any upconing of poorer-quality water from depths below the base of the well.

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 SAS withdrawals presents a potential risk to the water supply for all of Monroe County. FKAA is a permitted Floridan Aquifer User, which should offset any anticipated drought-driven saltwater intrusion event. FKAA also operates reverse osmosis facilities in Marathon and Stock Island.

Other regional water issues have been identified 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 prediction 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 (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 adaptation mitigation 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 a permitted Floridan Aquifer User, which should offset any anticipated

drought-driven saltwater intrusion event. Further, FKAA also operates RO facilities in Marathon and Stock Island, with a combined supply capacity of 3 MGD, as an alternative water source for the county during emergencies and extreme peaks in demand.

3.0 DATA AND ANALYSIS

3.1 Population Information

The City's current and future population figures stated herein are derived from City of Marathon Planning and Zoning Department, BEBR, and 2010 & 2020 U.S. Census Data. Between 1990 and 2000, the City of Marathon's population grew from 10,404 to 10,741, an increase of 3.2%. Although the City's 2005 Objections, Recommendations, and Corrections Report (ORC) predicted a decline in population, based on the projections prepared by BEBR, in 2005 it was estimated that the City's population had increased to 10,850 residents. These estimates were revised downward for later years, leading to a BEBR-estimated population of 10,295 people in 2009. Despite this marginal correction, these estimates stand in stark contrast to the 2010 census data, which became available to City Staff during the previous preparation of this report.

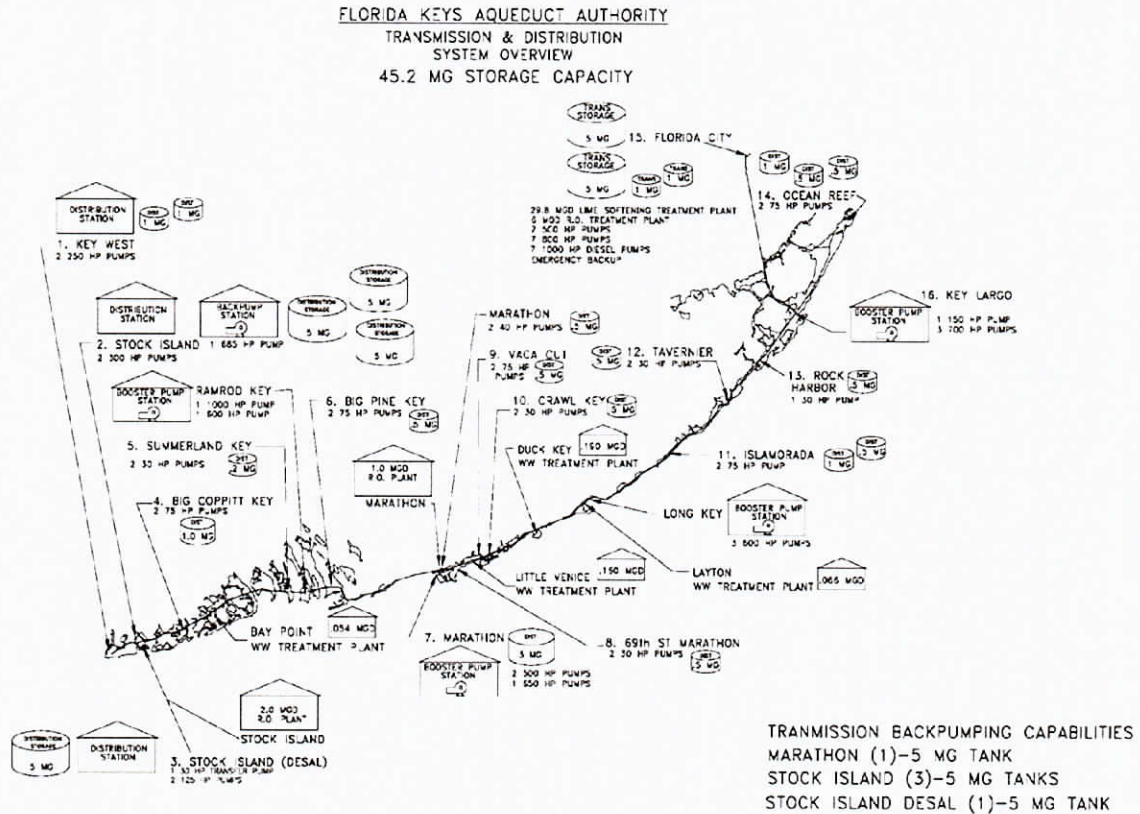
According to 2010 U.S. Census Data, the City's population had decreased to 8,297. Most of this decline occurred after 2005 as a result of the impacts of Hurricane Wilma and the 2008 downturn in the economy. The City has no current basis upon which to project recovery and growth over the next five to ten years. The City previously established an estimate of a conservative baseline increase of two percent per five years. Using this baseline, population estimates for 2015 are 8,463; and 2025 to 8,805 (this represents a decrease of 18 percent below the 2005 population estimates provided by BEBR). The current 2020 BEBR has estimated the population at 9,097. The 2020 Census provided a population of 9689, with an occupancy rate of 4,208. Using these updated population figures, and remaining allocations, a projection for 2025 and 2030 are possible. ~~Using this value, a baseline of seven percent every five years is established. This would create a population estimate of 9,734 in 2025, and 10,416 by 2030.~~ The 2030 population projection would be the equivalent of the previous 2010 projection prior to the receipt of the Census information.

3.2 Maps of Current and Future Areas Served.

The service area of FKAA includes all of Monroe County plus that area in Miami-Dade County within one mile of the transmission pipeline. The service area includes a mix of commercial, industrial, and residential zonings that typify the land uses of a suburban area. Minimal service exists in Miami-Dade County, consisting of service to only a ranger station just outside of the treatment plant. FKAA does not expect that the distribution facilities of the system will be significantly expanded in Miami-Dade County.

The map depicting current and future City boundaries served by the Transmission and Distribution System are provided in Figure 1. A GIS overlay map is provided in Exhibit B for clarity.

Figure 1



11/11/12
 Revised Per Adu Check 4/8/13

Source: Florida Keys Aquaduct Authority, 2021

3.3 Potable Water Level of Service Standard

Pursuant to the Comprehensive Plan, the City has an adopted LOS for potable water of 66.5 gallons per day per capita for residential use and 0.35 gallons per square foot of nonresidential use and an overall LOS of 100 gpd per capita (See Table 6-3 Summary of Level of Service Standards, City of Marathon Comp Plan).

Census 2010 indicated that the City's household size is 2.23. An equivalent residential Unit is defined as the amount of water use (gallons per day) that is equivalent to the amount a single household would use. Per the City of Marathon's Comprehensive Plan, the Residential LOS standard is 66.5 gallons per capita per day. Therefore, total household LOS standards would be 2.23 X 66.5 = 148.3 gallons. The accepted value for residential equivalents throughout the City of Marathon is 167 gallons per day.

The proposed LOS standards for residential, non-residential, overall and the equivalent residential unit are displayed below per table 3-2 under Policy 3-1.1.3 of the Comprehensive Plan.

MEASURE	LOS STANDARD
Residential LOS	66.5 gal/cap/day (167 g/ERU/day)
Nonresidential LOS	0.35 gal/sq.ft./day
Overall LOS	100 gal/day
Minimum Pressure	20 PSI per customer
Minimum Quality	Shall be defined by the USEPA (part 143 National Secondary Drinking Standards, 40 CFR 143, 44FR 42198).

3.4 Population and Potable Water Demand Projections

The FCAA 20-Year Water System Master Plan's *Population and Water Demand Forecast* states that according to the U.S. Census Bureau, the permanent population of Monroe County peaked at 82,180 in 1993. Since that time, the population has decreased to approximately 77,000 permanent residents in 2017. The State of Florida has designated the Keys as an "Area of Critical Concern" and beginning in 2023, will no longer allow issuance of new building permits for the municipalities in the Keys. Development within the Keys is highly regulated to ensure timely evacuation of its visitors and residents prior to severe hurricanes.

The 2040 population of the FCAA service area was estimated to be 77,101 in the Lower East Coast Water Supply Update, prepared by the South Florida Water Management District in 2018. This value is essentially equivalent to the current population and consistent with the expectation that the permanent population will remain constant over the next 20 years.

3.5 Water Supply Provided by Local Government

The City does not provide water. The FCAA is the area service provider. [As such, the City does hereby adopt by reference the Florida Keys Aqueduct Authority, 20-Year Water System Capital Improvement Master Plan, 2020, for a planning period of not less than 10 years. The plan addresses issues that pertain to water supply facilities and requirements needed to serve current and future development within the water service area. The FCAA 20 year plan is intended to be a living document and will be updated every two years to reflect the most current factors that affect the prioritization of the Capital Improvement Program, including water demand, regulatory requirements and asset condition. The City of Marathon shall update the 10-Year Water Supply Work Plan every five years or within 18 months of approval of the SFWMD LEC Water Supply Plan.](#)

[Prior to the next Master Plan update, FCAA is planning to accomplish the following tasks:](#)

Utilize Asset Management System for Capital Improvement Planning. FKAA has recently implemented an Asset Management System to manage its work orders for operations. This program has a separate module that can be utilized to develop and prioritize the projects in the Capital Improvement Program. FKAA should incorporate this module in development of its future CIP.

Expand Hydraulic Model. FKAA has developed a hydraulic model for a portion of its pipeline network. This model should be expanded to include the whole system network. The hydraulic model results can be transferred to the asset management system so that the system operating pressures can be included in the evaluation of the assets. Also, the model will also assist in troubleshooting operational issues and developing cost effective solutions for system upgrades.

Update Funding Requirements for Stock Island Reverse Osmosis Facility. The SIRO Facility requires a significant investment, with an estimated budget of \$50 million. At the present time, FKAA has applied for various state and federal grants to offset or potentially fund the facility. However, the determination of whether FKAA will receive these funds may not be known until 2020.

Update Financial Model. The financial model presented in Section 7 incorporates the current CIP for the next five years, but then tapers down to the historic level of funding. Once a final determination is made regarding the amount that FKAA wants to invest in its CIP in the later years, the financial model, and Master Plan, will need to be updated to reflect those objectives.

3.6 Water Supply Provided by Other Entities

The Florida Keys Aqueduct Authority (FKAA) is the sole provider of potable water in the Florida Keys, established by Special Legislation, Chapter 76-441, L.O.F. (as amended). FKAA's primary water supply is the Biscayne Aquifer, a shallow groundwater source. The FKAA's wellfield is located within an environmentally protected pine rockland forest west of Florida City. The location of the wellfield near Everglades National Park, along with restrictions enforced by state and local regulatory agencies, contributes to the unusually high water quality. These wells contain some of the highest quality groundwater in the state, meeting all regulatory standards prior to treatment. Additionally, the FKAA is continually monitoring, assessing, and working to eliminate potential hazards to our water source, including inappropriate aquifer utilization, unsuitable land uses, and the potential for saltwater intrusion.

The groundwater from the wellfield is treated at the FKAA's Water Treatment Facility in Florida City, which currently has a maximum water treatment 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 process is the newly constructed reverse osmosis (RO) water treatment plant which is capable of producing 6 MGD from the brackish Floridan Aquifer. The product water from these treatment processes is then disinfected and fluoridated. The FKAA treated water is pumped 130 miles from Florida City to Key West supplying water to the entire Florida Keys.

The FKAA maintains storage tank facilities which provide an overall storage capacity of 45.2 million gallons system wide. 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 potable water under emergency conditions. The RO desalination plants have design capacities of 2.0 and 1.0 MGD, respectively.

Demand for Potable Water

Figures 2 and 3 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. In March 2008, South Florida Water Management District (SFWMD) approved the FKAA's modification of WUP 13-00005-5-W for a 20-year allocation from the Biscayne and Floridan Aquifers. This modified WUP provides an annual allocation of 8,751 Million Gallons (MG) or 23.98 MGD and a maximum monthly allocation of 809 MG with a limited annual withdrawal from the Biscayne Aquifer of 6,492 MG or 17.79 MGD and an average dry season (December 1st-April 30th) of 17.0 MGD.

In order to meet the requirements of this limitation, the FKAA constructed a new Floridan Aquifer Reverse Osmosis (RO) water treatment system. This RO water treatment system is designed to withdraw brackish water from the Floridan Aquifer, an alternative water source approximately 1,000 feet below the ground surface and treat the water to drinking water standards. The RO water treatment plant provides added capability to limit Biscayne aquifer withdrawals and is designed to meet current and future water demands. The RO water treatment system provides an additional 6.0 MGD of potable water.

Along with the new reverse osmosis water treatment plant, 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.

Figure 2. 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

Figure 3. 2021~~19~~ Potable Water Demand Summary

FLORIDA KEYS AQUEDUCT AUTHORITY
Potable Water Demand Summary - New Water Demand, Actual Water Demand, and Expected Water Demand

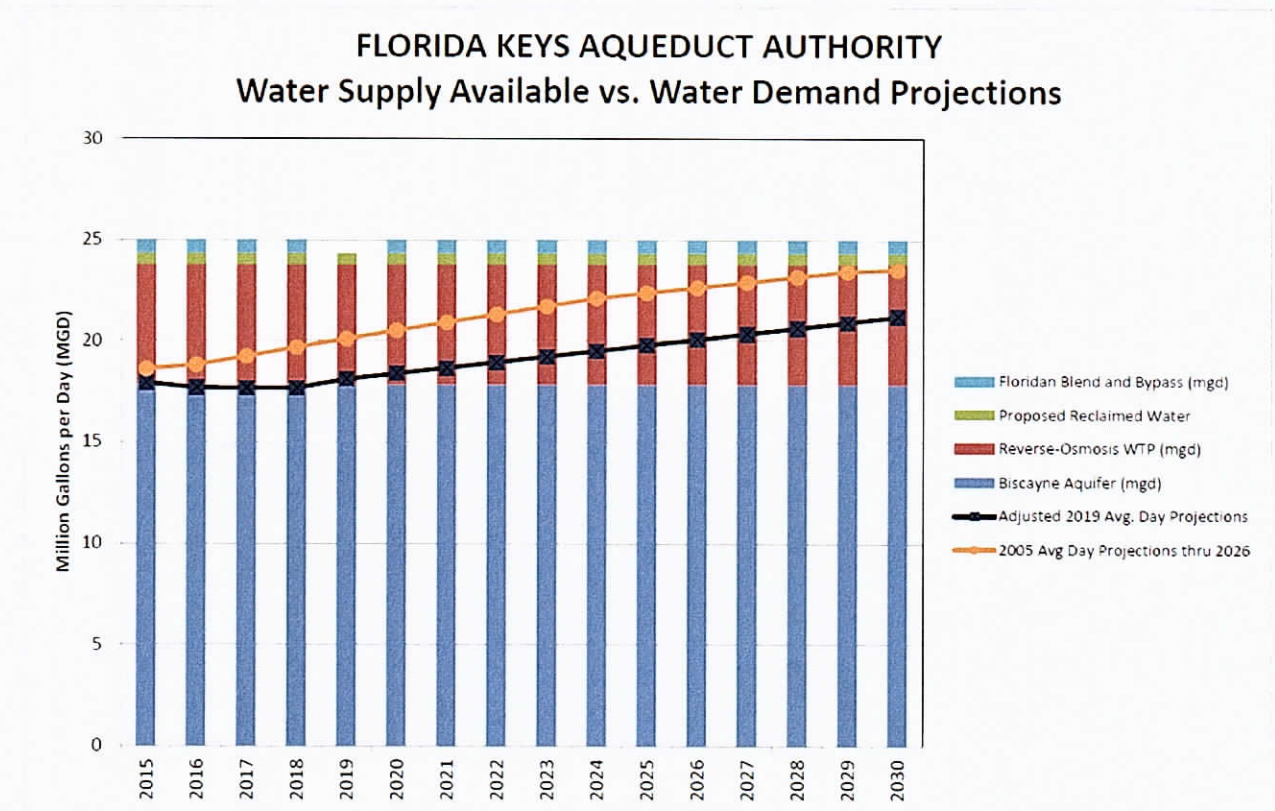
Municipality	Year - 2020		Year - 2020	Year 2021
	New Water Service - Gallons/Year	Metered Water - Gallons/Year	Actual Water Demand - Gallons/Year*	Expected Water Demand - Gallons/Year
Unincorporated Monroe County	1,568,600	2,258,801,352	2,933,092,284	2,934,660,884
City of Key West	1,227,500	1,494,197,833	1,940,241,505	1,941,469,005
City of Marathon	258,100	590,319,098	766,539,470	766,797,570
City of Key Colony	23,600	116,185,572	150,868,957	150,892,557
City of Layan	0	10,768,347	13,982,883	13,982,883
City of Islamorada	413,000	663,275,728	861,274,905	861,687,905
Entire Florida Keys	3,490,800	5,133,547,930	6,666,000,004	6,669,490,804
SPWMD WUP Annual Allocation			8,751,000,000	8,751,000,000

*metered = unmetered water demand (i.e. flushing, leaks, etc.)

Source: Florida Keys Aqueduct Authority, 2021

Figure 4 illustrates projected water supply availability vs projected water demand. Demand for potable water is influenced by many factors, including the number of permanent residents, seasonal populations and day visitors, the demand for commercial water use, landscaping practices, conservation measures, and the weather. [Section 2.5.1 of the FCAA CIP states that “the water demand for cruise ships, fire service, and hydrant are grouped as ‘other’ since their total is less than one percent of the water demand.”](#)

Figure 4. FCAA Water Supply Available vs. Water Demand Projections



Source: Florida Keys Aqueduct Authority, 2021

The Florida Keys Aqueduct Authority draws from four different supply sources in the Keys. Most of the supply (approximately 17.79 MGD) is fresh groundwater from the Biscayne Aquifer, which is treated through a lime softening process. This is supplemented with approximately 6 MGD of groundwater from the brackish Floridan Aquifer, which is treated at FCAA’s Low-Pressure Reverse Osmosis facility; both the lime softening plant and the LPRO facility are located at the J. Robert Dean Water Treatment Plant in Florida City. Additionally, two seawater desalination plants located in Marathon and Stock Island contribute emergency water supply; the Marathon plant has a capacity of 1 MGD and the Stock Island plant has a capacity of 2 MGD.

Per the terms of FCAA’s water use permit with South Florida Water Management District, the water supply is limited to a maximum daily withdrawal of 17 MGD during

the dry season (December-April) if aquifer levels fall below 1.25 NGVD29 at USGS monitoring well G-613.

Figure 5. FCAA Water Supply Sources

Water Supply Sources

Location	Source Water	Treatment Process	Capacity (MGD)
Florida City	Biscayne Aquifer	Lime Softening	17.79 ¹
Florida City	Floridan Aquifer	Low-Pressure Reverse Osmosis	6
Marathon	Seawater	Desalination and/or R.O.	1
Stock Island	Seawater	Desalination and/or R.O.	2

¹ Max day withdrawal limited to 17 MGD during dry season if aquifer level falls below 1.25 NGVD29 at USGS monitoring well G-613 between December 1 and April 30.

Source: [Florida Keys Aquaduct Authority, 2020](#)

3.7 Conservation

The City currently coordinates with the FCAA to assist with water conservation and reuse efforts per Comprehensive Plan Objective 4-5.2 *Promote Water Conservation*. The City also actively participates in implementing the FCAA's Water Conservation Plan consistent with SFWMD's Water Shortage Plan and Water Conservation Program. Comprehensive Plan Policy 6-1.2.2: *Protect and Conserve Potable Water Supply* states:

1. Potable water shall be conserved through enforcement of conservation measures;
2. The City shall require the use of alternative water supplies such as treated wastewater, stormwater, cisterns, and reverse osmosis systems for landscape irrigation; and
3. The City shall require the use of water-saving plumbing fixtures on all new development.

Additional conservation measures are mandated by state regulations such as ultra-low volume fixtures and rain sensor devices and are currently utilized by the City. The Comprehensive Plan shall reflect all conservation measures contained within the Lower East Coast Water Supply Plan except those measures that are solely the responsibility of the provider, FCAA such as establishing rates and leak detection and repair. Additionally, the City enforces all FCAA or SFWMD mandates for restricted water use. The City is supportive of all measures the FCAA implements to conserve water including a leak detection program, conservation-based rate schedule and the use of reclaimed water/ Grey water use in the City. The City has reviewed the possibility of requiring reuse of water. City-wide reuse does not appear to be feasible at the current time based on the existing infrastructure that is operated and maintained by the FCAA.

The City's existing policies and the proposed new policies that support water conservation provide a good baseline for moving toward the goal of reduced consumption and usage of water. The City acknowledges that there are numerous variables that may affect the use and conservation of water, but the framework provided is anticipated to lessen overall consumption and reduce the LOS standard over a 20-year horizon. The South Florida Water Management District's year-round landscape watering restrictions (Chapter 40E-24, Florida Administrative Code) are designed to ensure the efficient use of water landscape (includes lawns) irrigation. The restrictions allow enough water to maintain healthy landscapes year-round. These mandatory restrictions specify the time and the days of the week when watering is permitted for residential and nonresidential locations. The City amended Chapter Fourteen Article 4 Entitled Water Conservation through Ordinance 2021-07 to ensure compliance with the year-round restrictions. Policy 5-1.1.12, as enumerated below is further supported by the recent adoption of the year round rule by the City of Key Colony Beach as well.

The SFWMD LEC plan also identified Florida-Friendly Landscaping™ as a means to using low maintenance and drought tolerant landscaping in an effort to conserve water, reduce pollution, erosion, and create wildlife habitat. The City of Marathon encourages xeriscaping as set forth in the existing landscape ordinance, and further encourages the planting of native vegetation through the BPAS code sections. The code section cites a 75% native vegetation planting within the open space area of the project. Additionally secondary cisterns of 2500 gallons are also credited towards points within BPAS. The cisterns allow for the collection of rain water to reduce water demand, and reduce potential stormwater runoff issues.

3.7.1 County-wide Issues

Water conservation is one method available to promote the reduction of use and increase of availability of potable water. FCAA implements a high base water rate for water use, which effectively deters wasteful water use. Implementation of mandatory year-round watering restrictions also aid in conserving water.

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

The City will continue to coordinate future water conservation efforts with the FCAA and the SFWMD to ensure that Best Management Practices (BMP) are utilized. The City will continue to implement the existing goals, objectives and policies in the comprehensive plan that promote water supply and conservation in a manner that will satisfy consumer demand while creating no adverse impacts to the environment. The City will participate in the Interlocal Agreement between Monroe County and the other municipalities that will ensure the availability of potable water prior to the issuance of a building permit. Currently the City requires a letter of coordination from FCAA stating that water will be available for all development prior to the issuance of a building permit.

[Florida Keys Aqueduct Authority has a long history of promoting water conservation through public outreach and a variety of educational materials. Currently, FKAA is transitioning its meter network to smart meters that allow customers to monitor their usage electronically and includes leak status reporting shortly after probable leaks occur. As a result of these measures, FKAA has a 14-year average per capita consumption of 109 GPCD, which is much less than the rate of 138 GPCD used for the entire region in the Lower East Coast Water Supply Update.](#)

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 cost of developing a centralized collection, treatment and distribution system for recycled water separate from the FKAA infrastructure in the City shall be reviewed for financial feasibility. The City has implemented a public infrastructure program to construct and operate central sewer collection and treatment systems. Sewage treatment facilities have the capability to make available gray water for non-potable water applications, such as irrigation for City parks and potentially private entities such as the Sombrero Golf Course. However, the lack of possible users has inhibited the necessary investment to create and maintain a viable reuse water distribution system, and the portion of the FDEP permits to use reclaimed water have been temporarily suspended.

3.8.1 Regional and County-wide Issues

State law supports reuse efforts. For the past years, Florida's utilities, local governments, and water management districts have led the nation in implementing water reuse programs that increase the quantity of reclaimed water used and public acceptance of reuse programs. Section 373.250(1) F.S. provides that "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."

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

The City will support the SFWMD and Monroe County water reuse projects, and implementation of new regulations or programs designed to increase the volume of reclaimed water used and public acceptance of reclaimed water. [The City continues the support the FKAA in the use of reverse osmosis at the facility located in Marathon. The SFWMD LEC identified that no alternative water supply projects were proposed in either Monroe County or Miami Dade County.](#)

3.9 Climate Change and Sea Level Rise

Southeast Florida is widely considered one of the most vulnerable regions to the impacts of climate change and sea level rise. This is especially true of the Florida Keys, a 112-mile string of offshore islands connected by US 1 to Miami-Dade County. As discussed earlier, 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 adaptation mitigation 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 FCAA wellfields in Florida City under even the worst-case 2060 sea level rise scenarios. However, FCAA continues to monitor the most current data and analysis regarding this issue. Currently the City of Marathon does not have an Energy and Climate Element of the Comprehensive Plan. It is therefore recommended to currently address Climate Change and SLR through existing governmental coordination and through existing plans such as the Southeast Florida Regional Compact on Climate Change.

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

FCAA presently operates two reverse osmosis (RO) plants within Monroe County, in Marathon and Stock Island, which have a combined production capacity of 3 MGD. A Floridan wellfield and RO water treatment facility were constructed by FCAA in Florida City and have been operational since the fall of 2009. This RO water treatment plant treats the brackish water of the Floridan Aquifer and has a production capacity of 6 MGD. Storage facilities maintained by the FCAA have a total storage capacity of 45.2 MG; of this amount, there is 12 MG of storage available in above ground storage reservoirs at Florida City. The remaining capacity is obtained from tanks located throughout the transmission and distribution system that provide an additional 33.2 MG of storage capacity. It is therefore anticipated that FCAA will be well positioned to accommodate all of Monroe County's future water demands as sea level rise impacts South Florida's regional water supply.

4.0 CAPITAL IMPROVEMENTS

The FCAA 20-Year Water System Capital Improvement Master Plan (the "FCAA CIP") identifies all proposed work projects affecting the City of Marathon. [The City does hereby adopt the FCAA 20-Year Water System Capital Improvement Master Plan \(the "FCAA CIP"\).](#)

4.1 Work Plan Projects

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

4.2 Capital Improvements Element/Schedule

Due to the FCAA's role as sole provider of potable water, the City's Capital Improvements Element does not include any itemized projects or expenditures. However, Comprehensive Plan Objective ~~6-1.39-1.2: *Develop and Implement a Concurrency Management System*~~ states "~~Pursuant to Ch. 163, F.S., and Rule 9J-5.0055 F.A.C.,~~ The City shall develop and implement a Concurrency Management System, which shall ensure that facilities and services needed to support development are available concurrent with the impacts of new development and redevelopment."

The City has reviewed the FCAA CIP including the above mentioned work projects, and fully supports them, this includes the work that occurred on Grassy Key (Line time 6). Further, the City of Marathon has reviewed the findings and recommendations in Section 8 of the FCAA CIP, including those that apply specifically to facilities in Marathon as identified in Sections 5-7 in regards to the Marathon storage tanks and pump stations.

The City will adopt by reference the FCAA CIP thus linking water availability and programmed improvements with the City's Concurrency Management System to continue the permit review and approval process that requires evidence of water supply availability prior to the issuance of a building permit and certificate of occupancy. The Florida Fire Prevention Code, as amended, is adopted in Section 6-21 of the Marathon code of ordinances. The Florida Fire Prevention Code adopted by reference NFPA® 1, Fire Code, and NFPA 101®, Life Safety Code®, with amendments tailored to this state's provisions. NFPA® codes, standards, recommended practices, and guides ("NFPA Standards"), are developed through a consensus standards development process approved by the American National Standards Institute. Chapter 18 of the 2021 edition of NFPA® 1, Fire Code, entitled "Fire Department Access and Water Supply" establishes the appropriate fire flow requirements for buildings in Section 18.4.

Figure 6. NFPA 1 Excerpt of Table 18.4.5.2.1 entitled Minimum Required Fire Flow and Flow duration for Buildings

Table 18.4.5.2.1 Minimum Required Fire Flow and Flow Duration for Buildings

Fire Flow Area ft ² (× 0.0929 for m ²)					Fire Flow gpm [†] (× 3.785 for L/min)	Flow Duration (hours)
I(443), I(332), II(222)*	II(111), III(211)*	IV(2HH), V(111)*	II(000), III(200)*	V(000)*		
0-22,700	0-12,700	0-8,200	0-5,900	0-3,600	1500	2
22,701-30,200	12,701-17,000	8,201-10,900	5,901-7,900	3,601-4,800	1750	
30,201-38,700	17,001-21,800	10,901-12,900	7,901-9,800	4,801-6,200	2000	
38,701-48,300	21,801-24,200	12,901-17,400	9,801-12,600	6,201-7,700	2250	
48,301-59,000	24,201-33,200	17,401-21,300	12,601-15,400	7,701-9,400	2500	
59,001-70,900	33,201-39,700	21,301-25,500	15,401-18,400	9,401-11,300	2750	
70,901-83,700	39,701-47,100	25,501-30,100	18,401-21,800	11,301-13,400	3000	3
83,701-97,700	47,101-54,900	30,101-35,200	21,801-25,900	13,401-15,600	3250	
97,701-112,700	54,901-63,400	35,201-40,600	25,901-29,300	15,601-18,000	3500	
112,701-128,700	63,401-72,400	40,601-46,400	29,301-33,500	18,001-20,600	3750	
128,701-145,900	72,401-82,100	46,401-52,500	33,501-37,900	20,601-23,300	4000	
145,901-164,200	82,101-92,400	52,501-59,100	37,901-42,700	23,301-26,300	4250	
164,201-183,400	92,401-103,100	59,101-66,000	42,701-47,700	26,301-29,300	4500	4
183,401-203,700	103,101-114,600	66,001-73,300	47,701-53,000	29,301-32,600	4750	
203,701-225,200	114,601-126,700	73,301-81,100	53,001-58,600	32,601-36,000	5000	
225,201-247,700	126,701-139,400	81,101-89,200	58,601-65,400	36,001-39,600	5250	
247,701-271,200	139,401-152,600	89,201-97,700	65,401-70,600	39,601-43,400	5500	
271,201-295,900	152,601-166,500	97,701-106,500	70,601-77,000	43,401-47,400	5750	
Greater than 295,900	Greater than 166,500	106,501-115,800	77,001-83,700	47,401-51,500	6000	
		115,801-125,500	83,701-90,600	51,501-55,700	6250	
		125,501-135,500	90,601-97,900	55,701-60,200	6500	
		135,501-145,800	97,901-106,800	60,201-64,800	6750	
		145,801-156,700	106,801-113,200	64,801-69,600	7000	
		156,701-167,900	113,201-121,300	69,601-74,600	7250	
		167,901-179,400	121,301-129,600	74,601-79,800	7500	
		179,401-191,400	129,601-138,300	79,801-85,100	7750	
		Greater than 191,400	Greater than 138,300	Greater than 85,100	8000	

*Types of construction are based on NFPA 220.

†Measured at 20 psi (130.9 kPa).

Source: National Fire Prevention Association, NFPA 1 Fire Code, 2021 Edition

Section 2.5.1 of the FKAAs CIP states that “the water demand for cruise ships, fire service, and hydrant are grouped as ‘other’ since their total is less than one percent of the water demand.” Additionally, section 6.3 of the FKAAs CIP encourages the use of local storage tanks and pump stations in lieu of direct taps into the transmission main but cites the difficulty of acquiring property for the purposes of building the new storage tanks or pump stations. Objective 3-5.6, and subsequent policies will aid in

ensuring that these level of service standards are met prior to permit issuance.

The City of Marathon has approved numerous interlocal agreements to ensure coordination with the water supplier (FKAA), the County, and the other municipalities in the Keys. Some examples include Resolution 2013-42, which approved an interlocal agreement between the City of Marathon and the Florida Keys Aqueduct Authority for installation and maintenance of fire hydrants. Resolution 2013-85, which approved an interlocal agreement With Monroe County, Florida Keys Aqueduct Authority, Key Largo Wastewater Treatment District, the Village Of Islamorada And the cities Of Key Colony Beach, And Key West regarding the year two of four distribution of Mayfield Grant Funds. Resolution 2015-100 approved the second amendment to the interlocal agreement with Florida Keys aqueduct authority to increase the charges for billing services. Further interlocal agreements exist in regards to climate change, sea level rise, disaster recovery, emergency management and work needed to prepare for those changes. Proposed policies 5-1.1.12 and 5-1.1.13, ensure the continued coordination of these efforts.

5.0 GOALS, OBJECTIVES AND POLICIES

The City Council of City of Marathon shall adopt through ordinance the 10-Year Water Supply Facilities Work Plan as a standalone addendum to the City of Marathon Comprehensive Plan and the following objectives and policies as enumerated, renumbering existing objectives and policies accordingly. Staff has analyzed the existing comprehensive plans objectives, goals, and policies, and thus formulated one new objective, and six new policies to meet the statutory requirements regarding potable water supply. The proposed new policies are listed below:

Policy 3-5.1.2: Interlocal Agreement with FKAA to Identify the Availability of Water Supply to Serve Existing and New Development.

By December 31, 2014, ~~2021~~ 2024 the City of Marathon shall enter into an interlocal agreement with the Florida Keys Aqueduct Authority to formulate a mechanism that will allow the FKAA and the City to identify the availability of water supply needed to serve existing and new development within the City, monitor the use of potable water, and implement such alternative water supply projects, traditional water supply projects, conservation projects and reuse necessary to meet the City's water supply needs.

Policy 3-5.1.4: Update 10-Year Water Supply Facilities Work Plan.

The City of Marathon shall update the 10-Year Water Supply Work Plan every five years or within 18 months ~~after the government board of the South Florida Water Management District approves an updated regional water supply plan~~ of approval of the SFWMD LEC Water Supply Plan.

Policy 3-5.5.5 Encourage Use of Rainwater

The City shall permit and encourage rainwater storage facilities for all household uses such as but not limited to, irrigation, car, patio, and boat washing. [§163.3177(6)(c), F.S.]

Objective 3-5.6 Ensure Adequate Water Pressures For Fire Protection

The City shall continue to coordinate with FKAA to ensure adequate capacity is available to provide for fire flows for protection of the public health, welfare, and safety. [§163.3177(3)(a)3., F.S.]

Policy 3-5.6.1 Coordinate with FKAA to Ensure Fire Flows

The City shall coordinate with the FKAA, in accordance with its Capital Improvements Program, to continue upgrading the distribution system toward the goal of providing fire flow capabilities throughout Marathon as funds and land are available. Fire flows shall meet the provisions of the Florida Fire Prevention Code.

Policy 3-5.6.2 Fire Flow LOS

The City shall require that at the time a construction permit is issued, adequate fire flow is supplied to the site in accordance with the Florida Fire Prevention Code.

Policy 5-1.1.12 Water Supply Compatibility

The City shall continue to coordinate with the County and Cities of Layton, Key Colony Beach, Key West, the Village of Islamorada, and FKAA as necessary to facilitate system-wide compatibility on such potable water-related issues as potable water levels of service, consumption projections, water conservation programs, and emergency management.

Policy 5-1.1.13 Energy and Climate Plans

The City, shall continue to coordinate with the County and Cities of Layton, Key Colony Beach, Key West, the Village of Islamorada, FKAA, and other South East Florida Regional Compact Climate Change partners as necessary to facilitate compatibility on such energy and climate related issues (including but not limited to, emergency management, flood risk, storm surge, threats to potable water supply, the potential for changing habitat and landscapes, the need for shoreline stabilization and the potential impacts to infrastructure necessary to serve proposed uses).

6.0 REGIONAL ISSUES IDENTIFIED IN REGIONAL WATER SUPPLY PLANS

6.1 Lower East Coast Water Supply Plan Update, November 8, 2018

The sole source provider of potable water to Monroe County is FKAA, whose

wellfield is located in Florida City. The limited availability of SAS withdrawals presents a potential risk to the water supply for all of Monroe County. FCAA is a permitted Floridan Aquifer User, which should offset any anticipated drought-driven saltwater intrusion event. FCAA also operates reverse osmosis facilities in Marathon and Stock Island.

6.2 Integrating Climate Change & Water Supply Planning In Southeast Florida, Southeast Florida Regional Climate Change Compact, June 10, 2014

The Southeast Florida Regional Climate Change Compact, which includes Palm Beach, Broward, Miami-Dade, and Monroe Counties, predicts that the sea level will rise (the Compact's A Unified Sea Level Rise Projection for Southeast Florida [October 2015] predicts that the sea level will rise between 6 and 10 inches by 2030). This may have implications regarding the ability of the local utility to provide fresh potable water from the Biscayne Aquifer to Monroe County as the saltwater intrusion line shifts westward towards the FCAA wellfield. 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 FCAA wellfields in Florida City under even the worst-case 2060 sea level rise scenarios. However, FCAA continues to monitor the most current data and analysis regarding this issue.

7.0 REFERENCES

- Florida Keys Aqueduct Authority, 20-Year Water System Capital Improvement Master Plan, 2020
- 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
- South Florida Water Management District, Lower East Coast Water Supply Plan Update, November 8, 2018
- Southeast Florida Regional Climate Change Compact, A Unified Sea Level Rise Projection for Southeast Florida, October 2015
- Southeast Florida Regional Climate Change Compact, Integrating Climate Change & Water Supply Planning In Southeast Florida, June 10, 2014

8.0 EXHIBITS

Exhibit A: Section 7.2 of the Florida Keys Aqueduct Authority 20-Year Water System Capital Improvement Master Plan, December 2020.

Exhibit B: Florida Keys Aqueduct Authority Facilities Overview Map.

[Exhibit C: South Florida Water Management District, Lower East Coast Water Supply Plan Update, November 8, 2018](#)

Ron DeSantis
GOVERNOR



Dane Eagle
SECRETARY

April 13, 2022

The Honorable John Bartus
Mayor, City of Marathon
9805 Overseas Highway
Marathon, Florida 33050

Dear Mayor Bartus:

The Department of Economic Opportunity (“Department”) has completed its review of the comprehensive plan amendment for the City of Marathon adopted by Ordinance No. 2021-10 on January 11, 2022 (Amendment No. 21-02ACSC), which was received and determined complete on February 28, 2022. We have reviewed the amendment in accordance with the state coordinated review process set forth in Sections 163.3184(2) and (4), Florida Statutes (F.S.), and have determined that the adopted amendment meets the requirements of Chapter 163, Part II, F.S., for compliance, as defined in Section 163.3184(1)(b), F.S. The Department is therefore issuing a Notice of Intent to find the comprehensive plan amendment “In Compliance.” A copy of the Notice of Intent is enclosed and will be posted on the Department’s Internet website. You may access the Notice of Intent at: <http://floridajobs.force.com/orc>.

The Department’s Notice of Intent to find a plan amendment “In Compliance” is deemed to be a final order if no timely petition challenging the amendment has been filed. If this plan amendment is challenged by an affected person, the amendment will not become effective until the Department or the Administration Commission enters a final order determining the amendment to be “In Compliance.”

Florida Department of Economic Opportunity | Caldwell Building | 107 E. Madison Street | Tallahassee, FL 32399
(850) 245.7105 | www.FloridaJobs.org | [www.Twitter.com/FLDEO](https://twitter.com/FLDEO) | www.Facebook.com/FLDEO

An equal opportunity employer/program. Auxiliary aids and service are available upon request to individuals with disabilities. All voice telephone numbers on this document may be reached by persons using TTY/TTD equipment via the Florida Relay Service at 711.

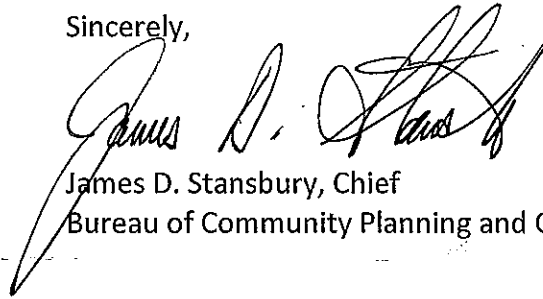
The Honorable John Bartus, Mayor

April 13, 2022

Page 2 of 2

If you have any questions concerning this review, please contact Scott Rogers, Regional Planning Administrator, by telephone at (850) 717-8510 or by email at scott.rogers@deo.myflorida.com.

Sincerely,

A handwritten signature in black ink, appearing to read "James D. Stansbury". The signature is fluid and cursive, with a large initial "J" and "S".

James D. Stansbury, Chief
Bureau of Community Planning and Growth

JDS/sr

Enclosure: Notice of Intent

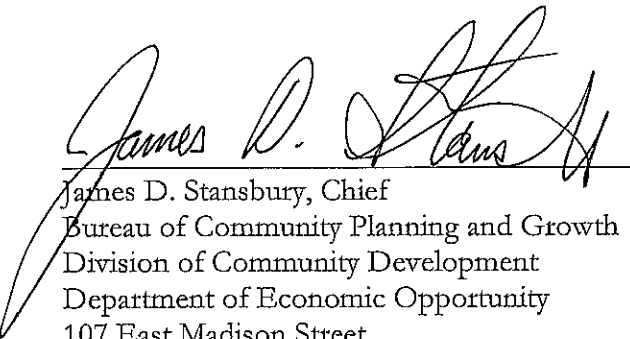
cc: Brain Shea, Planning Director, City of Marathon

Isabel Cosio Carballo, Executive Director, South Florida Regional Planning Council

STATE OF FLORIDA
DEPARTMENT OF ECONOMIC OPPORTUNITY
THE STATE LAND PLANNING AGENCY
NOTICE OF INTENT TO FIND THE
CITY OF MARATHON
COMPREHENSIVE PLAN AMENDMENT
IN COMPLIANCE
DOCKET NO. 21-02ACSC-NOI-4406-(A)-(I)

The Department gives notice of its intent to find the Amendment to the Comprehensive Plan for the City of Marathon, adopted by Ordinance No. 2021-10 on January 11, 2022, IN COMPLIANCE, pursuant to Section 163.3184(4), F.S.

If a timely petition challenging the Amendment is not filed within thirty (30) days after the local government adopted the Amendment, the Amendment become effective upon the posting of this Notice of Intent on the Department's Internet Website. If a timely petition is filed, the Amendment does not become effective until the Department or the Administration Commission enters a final order determining that the Amendment is in compliance.



James D. Stansbury, Chief
Bureau of Community Planning and Growth
Division of Community Development
Department of Economic Opportunity
107 East Madison Street
Tallahassee, Florida 32399