

**Weiss Serota Helfman  
Pastoriza Cole & Boniske, P.L.**

# Memo

**DATE: June 9, 2009 Council Agenda**

**TO: Honorable Mayor and Members of the Village Council**

**FROM: Stephen J. Helfman, Village Attorney's Office**

**RE: 10-Year Water Supply Facilities Work Plan**

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## **RECOMMENDATION**

It is recommended that the Village Council accept by resolution the attached 10-Year Water Supply Facilities Work Plan.

## **BACKGROUND**

In 2005, the Florida Legislature amended Section 163.3177(6)(c), Florida Statutes to require local governments to prepare and adopt a 10-Year Water Supply Facilities Work Plan within 18 months after the water management district approves a regional water supply plan or its update. The South Florida Water Management District updated ("SFWMD ") and approved its regional water supply plan entitled the Lower East Coast Water Supply Plan n February 2007. Since that time there have been numerous meeting between staff from the SFWMD, the Miami-Dade County Water and Sewer Department, the Florida Department of Community Affairs to identify the information and documentation needed by local governments to satisfy the statutory mandate. The 10-Year Water Supply Facilities Work Plan will be used in the near future as supporting data and analysis for amendments to the Comprehensive Plan, which will address water supply planning. The amendments to the Comprehensive Plan are also required by changes to Florida law in 2005 regarding water supply planning. Many local governments have yet to adopt 10-year water supply facilities work plans and related comprehensive plan amendments. There is no monetary penalty for any delay in doing so, however, the Florida Department of Community Affairs will not accept amendments to the comprehensive plan that affect water supply until the 10-year water supply facilities work plan and related comprehensive plan amendments are adopted.

Staff in the Building, Zoning and Planning Department, Public Works Department, Corzo, Castella, Carballo, Thompson, Salman, P.A. (C3TS) worked together in the preparation of the 10-Year Water Facilities Work Plan with assistance from the Village Attorney's office and Miami-Dade Water and Sewer Department.

**RESOLUTION NO. 2009-**

**A RESOLUTION OF THE VILLAGE OF KEY BISCAYNE,  
FLORIDA ACCEPTING THE TEN YEAR WATER SUPPLY  
FACILITIES WORK PLAN; AND PROVIDING FOR AN  
EFFECTIVE DATE.**

WHEREAS, in 2005 the Florida Legislature mandated that local governments prepare, a Ten Year Water Supply Facilities Work Plan, as a means to foster greater coordination between water supply and land use planning; and

WHEREAS, the Village's Public Works Department, together with the Building and Zoning Department, have prepared a Ten Year Water Supply Facilities Work Plan (the "Plan") following consultation and coordination with its consultant and staff of the South Florida Water Management District; and

WHEREAS, the Plan contains several proposed goals and objectives in accordance with state law and also serves as the supporting documentation and analysis for several proposed amendments to the Village's Comprehensive Plan contained in its Evaluation and Appraisal amendments; and

WHEREAS, the Village Council hereby finds that this Plan is in compliance with state law and acceptance of this Plan is in the best interests of the residents of the Village.

**NOW, THEREFORE, IT IS HEREBY RESOLVED BY THE VILLAGE COUNCIL  
OF KEY BISCAYNE, FLORIDA, AS FOLLOWS:**

**Section 1. Recitals Adopted.** That each of the recitals stated above is hereby adopted and confirmed.

**Section 2. Adoption.** That the Village Council hereby accepts the Ten Year Water Supply Facilities Work Plan, attached as Exhibit "A" to this Resolution.

**Section 3. Effective Date.** That this Resolution shall take effect immediately upon adoption.

PASSED AND ADOPTED this \_\_\_\_ day of \_\_\_\_\_, 2009.

\_\_\_\_\_  
MAYOR ROBERT L. VERNON

ATTEST:

\_\_\_\_\_  
CONCHITA H. ALVAREZ, MMC, VILLAGE CLERK

APPROVED AS TO FORM AND LEGAL SUFFICIENCY:

\_\_\_\_\_  
VILLAGE ATTORNEY



# **10-YEAR WATER SUPPLY FACILITIES WORK PLAN**

**June 2009**

**Prepared for:  
Florida Department of Community Affairs**

**Prepared by:  
Village of Key Biscayne Building, Zoning and Planning Department  
Village of Key Biscayne Public Works Department  
Corzo, Castella, Carballo, Thompson, Salman, P.A. (C3TS)**



### **VILLAGE COUNCIL**

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Weiss, Serota, Helfman, Pastoriza, Cole & Boniske, P.A.

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### **ADMINISTRATION**

Genaro "Chip" Iglesias, Village Manager  
Jud Kurlancheek, AICP, Building, Zoning, and Planning Director  
Armando Nunez, Public Works Director

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## **1.0 INTRODUCTION**

Chapter 163, Part II, Florida Statutes (F.S.), requires local governments to prepare and adopt Work Plans into their comprehensive plans within 18 months after their corresponding 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 February 15, 2007; therefore, the deadline for local governments within the Lower East Coast jurisdiction to amend their comprehensive plans by adopting a Work Plan is August 15, 2008. This document is prepared in compliance with the above obligations. The Work Plan contains amendments to the Village's Maser Plan. Those amendments will be processed at a later date. The Work Plan demonstrates that the Miami-Dade County Water and Sewer Department (WASD) has the capacity to provide potable water to all of their retail customers for the next 10-year planning period.

The purpose of the Village of Key Biscayne 10-Year 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 the Village's jurisdiction. The Village is located in Miami-Dade County, Florida. Residents of the Village of Key Biscayne (the Village) obtain their water directly from the Miami-Dade County Water and Sewer Department (WASD), which is responsible for ensuring that enough capacity is available for existing and future customers.

The Work Plan will incorporate recommendations already identified in Miami-Dade County's 20-Year Work Plan, since the Village is a retail buyer. 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 and conservation, and reuse programs that are necessary to serve existing and new development for at least a 10-year planning period. The Village of Key Biscayne Work Plan will adopt the same planning time schedule as the first ten years of Miami-Dade County's 20-Year Work Plan.

The Village's Work Plan is divided into six sections:

- Section 1 - Introduction
- Section 2 - Background Information
- Section 3 - Data and Analysis
- Section 4 - Capital Improvements
- Section 5 - Goals, Objectives, and Policies
- Section 6 - Conclusion

### **1.1 Statutory History**

Since early 2000, there have been serious discussions among Florida's water management districts, public and private utilities, and other stakeholders on whether traditional water supply sources currently used will be sufficient to meet the demand of a growing population as well as the needs of the agricultural and industrial sectors over the next twenty years. In addition, there is growing concern that the demand for additional water will adversely affect the environment. Recently, four of Florida's five water management districts have determined that the traditional

water supply sources currently used in their respective districts will not be sufficient to meet water demands.

In response to the findings, the Florida Legislature enacted bills in 2002, 2004, and 2005 to address the state's water supply needs. These bills, especially Senate Bills 360 and 444 (2005 legislative session), significantly changed Chapters 163 and 373 Florida Statutes 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**

Each local government must comply with the following requirements:

1. Coordinate appropriate aspects of its comprehensive plan with the appropriate water management district's regional water supply plan. [s. 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., 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 of Community Affairs for review. The submitted package must also include an amendment to the Capital Improvements Element, if necessary, to demonstrate that adequate public facilities will be available to serve the proposed Future Land Use Map modification.
3. Ensure that adequate water supplies and facilities are available to serve new development no later than the date on which the local government anticipates issuing a certificate of occupancy and consult with the applicable water supplier prior to approving 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)(a), F.S., effective July 1, 2005]. This "water supply concurrency" is now in effect, and local governments should be complying with the requirement for all new development proposals. In addition, local governments should update their comprehensive plans and land development regulations as soon as possible to address these statutory requirements. The latest point at which the comprehensive plan must be revised to reflect the concurrency requirements is at the time the local government adopts plan amendments to implement the recommendations of the Evaluation and Appraisal Report (EAR).
4. For local governments subject to a regional water supply plan, revise the General Sanitary Sewer, Solid Waste, Drainage, Potable Water, and Natural Groundwater Aquifer Recharge Element (the "Infrastructure Element"), within 18 months after the water management district approves an updated regional water supply plan, to:

- a. Identify and incorporate the alternative water supply project(s) selected by the local government from projects identified in the updated regional water supply plan, or the alternative project proposed by the local government under s. 373.0361(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 facilities work plan for at least a 10-year planning period for constructing the public, private, and regional water supply facilities identified in the element as necessary to serve existing and new development [s. 163.3177(6)(c), F.S.] Amendments to incorporate the water supply facilities work plan into the comprehensive plan are exempt from the twice-a-year amendment limitation. [s. 163.3177(6)(c), 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 appropriate regional water supply plan, the applicable District Water Management Plan, as well as applicable consumptive use permit(s). [s.163.3177 (6)(d), F.S.]

If the established planning period of a comprehensive plan is greater than ten years, the plan must address the water supply sources necessary to meet and achieve the existing and projected water use demand for the 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 the changes described in Paragraphs 1 through 5 above, revise the Intergovernmental Coordination Element to ensure coordination of the comprehensive plan with applicable regional water supply plans and regional water supply authorities' plans. [s.163.3177(6)(h)1., F.S.]
8. Address in the EAR 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 Village of Key Biscayne was incorporated in 1991. The Village encompasses an area of approximately 1.4 square miles. It is bounded by the Atlantic Ocean to the east, Bill Baggs Cape Florida State Park to the south, Biscayne Bay to the west, and Crandon Park to the north.

The Village of Key Biscayne is virtually built-out. Between 1990 and 2000, the Village population grew from 8,854 to 10,507, an increase of nineteen percent. The University of Florida reported the 2004 population of the village to be 11,160, producing an average yearly growth rate between 2000 and 2004 of 1.6 percent. This drop in the growth rate compared to the preceding decade mirrors an increasingly limited supply of undeveloped land on the island. Future development potential and population growth is limited by the scarcity in the Village of vacant and developable land.

Key Biscayne is an area of low population growth in comparison to other municipalities in Miami-Dade County. Its growth rate is dropping, and its population is predicted to level off by 2010 according to Miami-Dade County projections. No land has been annexed, no land is available for annexation, and no vacant land remains in Key Biscayne. Future growth will occur in the form of redevelopment. The composition of the Village will continue to evolve as older housing stock is demolished and replaced by larger dwelling units, a trend that is likely to continue until around 2047. New construction and redevelopment since 1995 has occurred in accordance with the Future Land Use Map and complies with Federal Emergency Management Agency and Coastal High Hazard Area regulations. Assessments of current and forecasted infrastructure levels of service for potable water reveal facilities adequately equipped to meet predicted demand and emphasize the need for continued interlocal cooperation.

### **2.2 Relevant Regional Issues**

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

### **3.0 DATA AND ANALYSIS**

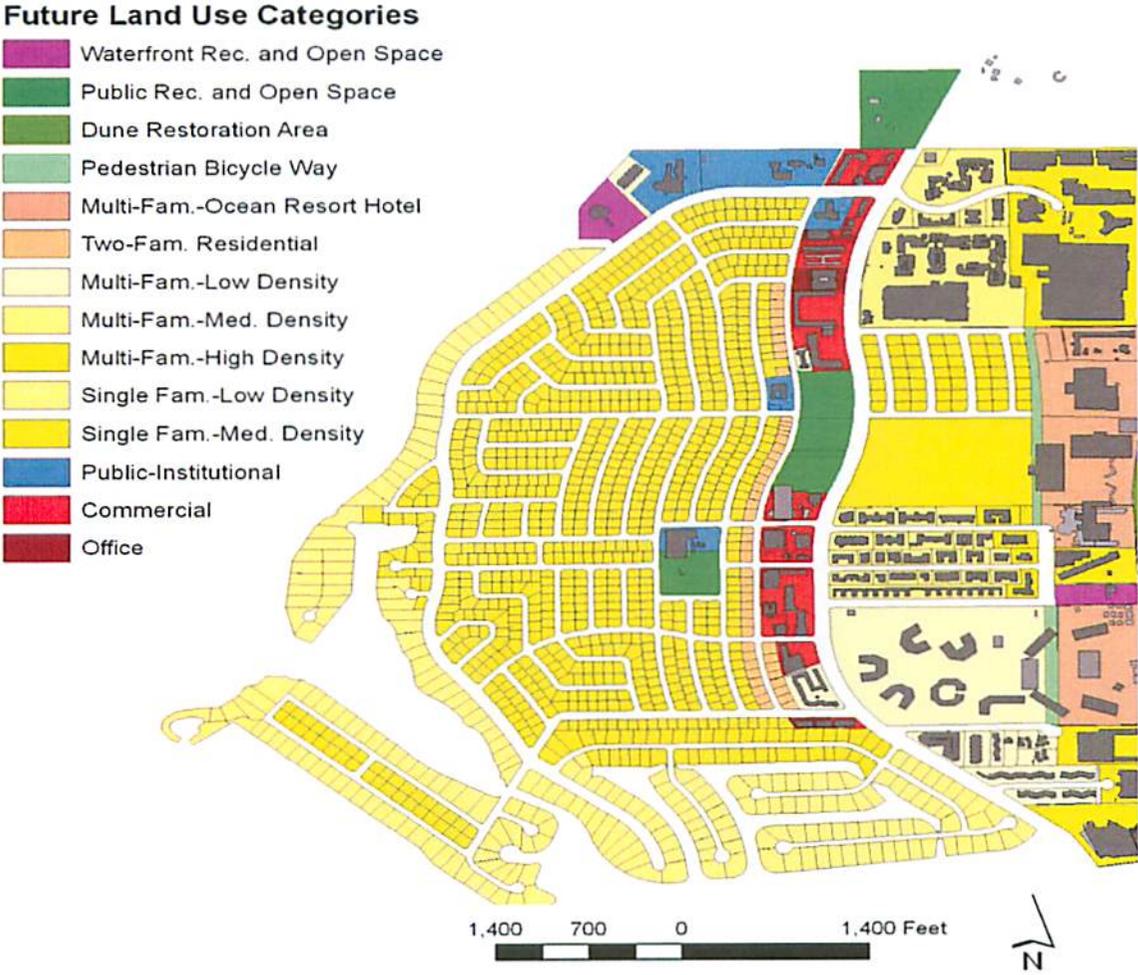
#### **3.1 Population Information**

The Village's existing and future population figures are derived from the Miami-Dade County Planning and Zoning Department as well as from the University of Florida. Between 1990 and 2000, the Village of Key Biscayne's population grew from 8,854 to 10,507, an increase of nineteen percent. The University of Florida reported the 2004 population of the Village to be 11,160, producing an average annual growth rate between 2000 and 2004 of 1.6 percent. This drop in the growth rate compared to the preceding decade mirrors an increasingly limited supply of undeveloped land on the island. Miami-Dade County has projected that the Village population will grow to approximately 11,600 in 2010 and then decline slowly to 11,425, where it will level off in 2025.

#### **3.2 Map of Current and Future Areas Served**

The map depicting current (and likely future) Village boundaries served by the WASD is provided in Figure 1. This constitutes all areas within the Village boundaries.

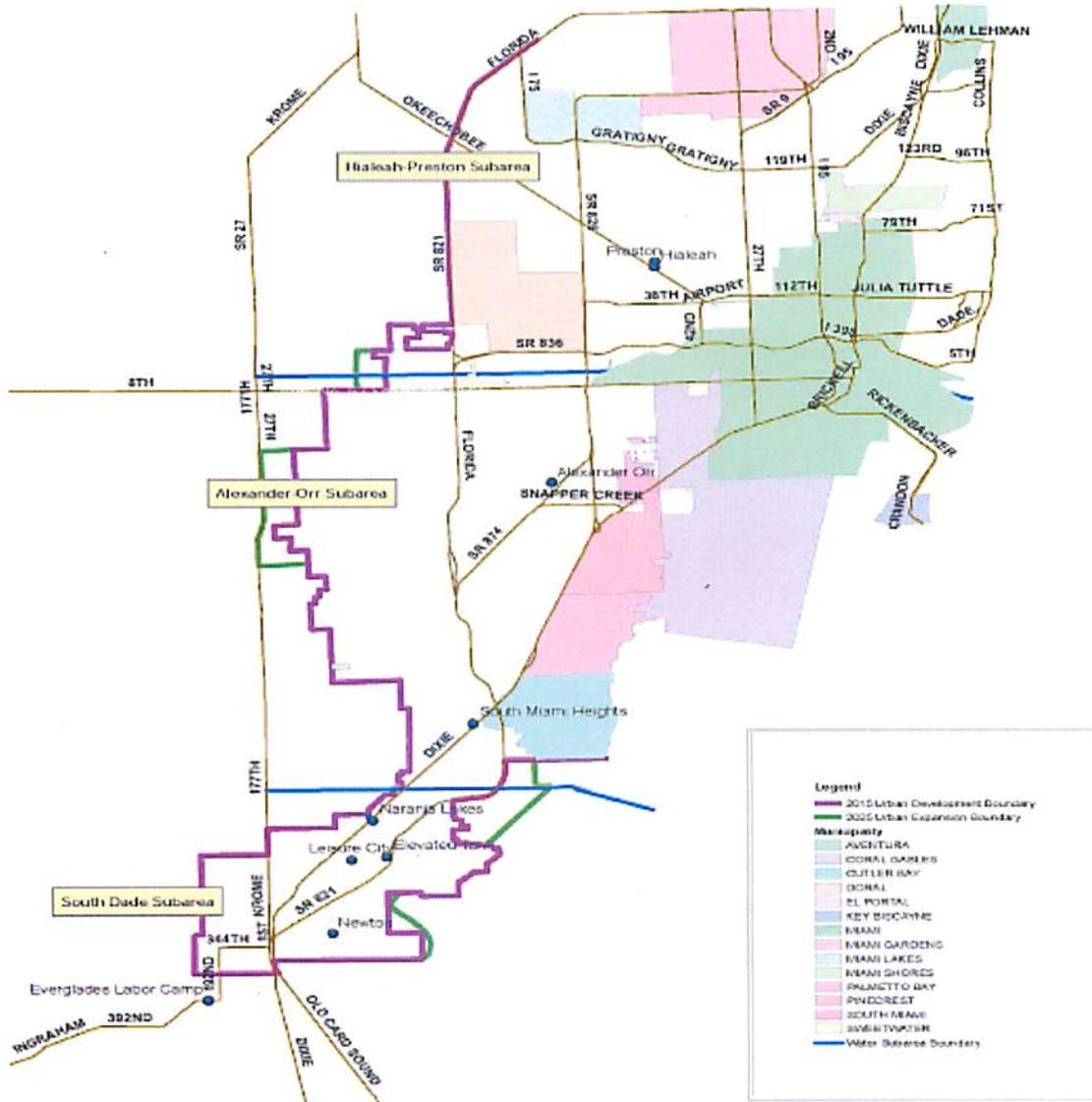
**FIGURE 1: VILLAGE OF KEY BISCAIYNE FUTURE LAND USE MAP/  
WATER SERVICES AREAS MAP**



Source: Key Biscayne Master Plan Evaluation and Appraisal Report, August 2007

The WASD's retail municipal customers, including the Village of Key Biscayne, are depicted below, in Figure 2.

**FIGURE 2: MIAMI-DADE WATER AND SEWER DEPARTMENT  
RETAIL CUSTOMERS BY MUNICIPALITY**



Source: Miami-Dade County Water Supply Facilities Work Plan, 2008, Appendix C, Exhibit C-5

### 3.3 Potable Water Level of Service Standard

The entire Village is served by the WASD distribution system. A pair of water mains (one 12-inch and one 24-inch) follow Crandon Boulevard into the Village. The WASD treatment and distribution system is inter-connected, so that even though the Alexander Orr, Jr., Treatment Plant is closest to Key Biscayne, all three of its treatment plants are considered a single system. The Village's adopted existing level of service for water is 200 gallons per person per day. Miami-Dade County's 20-Year Water Facilities Work Plan assumes an average countywide consumption of 155 gallons per person per day.

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

Population projections for WASD's service area in five-year increments from year 2005 to 2025 are shown in Table 1 (below). Overall, the Village population served by the WASD is expected to increase only slightly, from 11,160 to 11,600, then to decrease slightly to 11,425.

**TABLE 1 – RELATIONSHIP BETWEEN VILLAGE POPULATION AND WATER SUPPLY DEMANDS**

WATER SUPPLY UTILITY SERVICE WITHIN LOCAL GOVERNMENT'S JURISDICTION										
UTILITY SERVICE AREA	POPULATION PROJECTIONS					WATER SUPPLY DEMAND (MGD)				
YEAR ►	2005	2010	2015	2020	2025	2005	2010	2015	2020	2025
TOTAL Population (BEBR)										
"Own Utility"	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Miami-Dade WASD	11,160	11,600	11,425	11,425	11,425	1.73	1.80	1.77	1.77	1.77
Self-Served	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Calculated Total	11,160	11,600	11,425	11,425	11,425	1.73	1.80	1.77	1.77	1.77

**IMPORTANT NOTE: This is just a model. Actual timeframe can be extended to 2030 or beyond, or shortened.**

### **3.5 Water Supply Provided by Local Government**

The Village does not own or operate any water supply or treatment facility. The Village is wholly within the service area of WASD.

### **3.6 Water Supply Provided by Other Entities**

The Miami-Dade County 20-Year Water Supply Facilities Work Plan was completed in 2007. The intent of the County's Work Plan is to meet the statutory requirements mentioned in subsection 1.2 of this plan and to coordinate the WASD's water supply initiatives with the SFWMD's *Lower East Coast Water Supply Plan Update*.

The WASD's service area is all portions of Miami-Dade County within the Urban Development Boundary (UDB), excluding all or portions of North Miami, North Miami Beach, Aventura, Sunny Isles, Biscayne Park, Miami Gardens, Homestead and Florida City. The areas within the Urban Expansion are included in the planning horizon after 2015. The following summarizes Miami-Dade County's Work Plan:

- Description of population and water demand projections (Exhibit C-1 and C-2, Water Supply Service Area, Retail and Wholesale Customers, respectively, by municipality, provides municipal population projections and projected "Annual Average Daily Flow" finished water based on 155 gallons per capita per day (gpcd). The population information was derived from Miami-Dade County's Department of Planning and Zoning Transportation Analysis Zone (TAZ) 2004 population data. This subsection also provides a brief discussion of WASD's conservation and reuse programs.);
- The Water Supply Facilities Work Plan details the facilities and proposed alternative water supply (AWS) projects that are planned in order to meet the water demands through 2027. These projects are expected to be completed in increments consistent with the projected growth set forth in the Plan. The AWS projects and annual average daily demand (AADD) assumes that all current wholesalers will remain in the WASD system through 2027, except for the City of North Miami Beach. The AWS projects are included in the County's Capital Improvement Element.

In the 20-Year Work Plan, the WASD is committed to meet the water demand for the municipalities within the service area. The Village of Key Biscayne is served by the Alexander Orr, Jr., sub-area water treatment plant. This sub-area is comprised of a high pressure system with two major piping loops. This sub-area delivers water to nearly all of Miami-Dade County south of Flagler Street to SW 248<sup>th</sup> Street, including Virginia Key, Fisher Island, the Village of Key Biscayne, and, upon request, to the Cities of Homestead and Florida City.

The Alexander Orr, Jr., subarea, water treatment plant is supplied by four water supply wellfields (Alexander Orr, Jr.- capacity 74.4 MGD; Snapper Creek - capacity 40.0 MGD; Southwest - capacity 161.16 MGD; and West - 32.4 MGD), with a total designed capacity of approximately 308 MGD. In this subarea, there are also Upper Floridian Aquifer wells at two of the wellfields (West Wellfield and the Southwest Wellfield). These wells have a total capacity of 25.20 MGD.

The WASD anticipates using these wells for storage of fresh Biscayne Aquifer water during the wet season (when operating water levels in the canal allows) for extraction and use in the dry season. In order to use the Upper Floridian Aquifer wells, the WASD designed an ultraviolet (UV) light disinfection system for each ASR site to treat the Biscayne aquifer water before injecting in the Floridian Aquifer.

### **3.7 Conservation**

#### **3.7.1 Countywide Issues**

##### **The Miami-Dade Water Use Efficiency Plan**

Currently, the WASD is implementing all Best Management Practices (BMPs) included in the 20-Year Water Use Efficiency Plan, which was approved by the South Florida Water Management District in May 2007.

##### **Water Conservation Plans and Development Codes**

In addition, all of the WASD's wholesale customers are required to submit a Water Conservation Plan to its Water Use Efficiency Section as mandated by County Ordinance 06-177, Section 32-83.1 of the Miami-Dade County Code. The Plan will identify BMPs based on population characteristics and type of service for each municipal service area.

In addition, Miami-Dade County has developed recommendations for new development that would achieve higher water use savings than currently required by code. The recommendations were developed by an Advisory Committee and were presented to the Board of County Commissioners (BCC) on June 5, 2007. These water conservation recommendations were adopted by ordinance on February 5, 2008. The Ordinance requires that a manual for implementation of the recommendations be developed by July 2008. These water efficiency recommendations represent an additional 30 percent to the water savings identified in the 20-Year Water Use Efficiency Plan. All applicants will be required to comply with these future code requirements. The list of recommendations submitted to the BCC and the ordinance relating to water use efficiency standards are presented in Appendix D and are also posted in the Miami-Dade Water Conservation Portal.

##### **Per Capita Consumption**

Furthermore, the WASD will establish per capita consumption for all municipalities including those in its retail customer service area. Based on this data, the WASD will work with the municipalities to address those with higher than average per capita and will target programs for those areas. The County anticipates that the implementation of the BMPs identified in the 20-Year Water Use Efficiency Plan will result in an adjusted system wide per capita of 147.82 gpcd by 2027.

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

The Village will coordinate future water conservation efforts with the WASD and the SFWMD to ensure that proper techniques are applied. In addition, the Village will continue to support and expand existing goals, objectives and policies in the comprehensive plan that promotes water conservation in a cost-effective and environmentally sensitive manner. The Village will continue to actively support the SFWMD and Miami-Dade County in the implementation of new regulations or programs designed to conserve water during the dry season.

## **3.8 Reuse**

### **3.8.1 Regional and Countywide Issues**

For the past few 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 promotes 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 Village of Key Biscayne supports water reuse initiatives under consideration by both the SFWMD and Miami-Dade County. The latter has committed to implement a total of 170 mgd of water reuse as noted in the County's 20-year water use permit. In the 20-Year Work Plan, the County identified a number of water reuse projects and their respective schedule. According to the Plan,

reuse projects to recharge the aquifer with highly treated reclaimed water will be in place before additional withdrawals over the base condition water use are made from the Alexander Orr and South Dade sub-area wellfields. In addition, reuse irrigation projects are anticipated for the North and Central District Wastewater Treatment Plants. These projects will be implemented in the Cities of North Miami and North Miami Beach, and are currently under construction for Key Biscayne.

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

The Village will support SFWMD and Miami-Dade County water reuse projects, and implementation of new regulations or programs designed to increase the volume of reclaimed water used as well as public acceptance of reclaimed water.

#### 4.0 CAPITAL IMPROVEMENTS

The Village shall continue to monitor Miami-Dade County and the SFWMD in the implementation of any water supply, water distribution, or water reuse capital improvement projects within the Village boundaries. The Village does not have any capital improvement projects scheduled with regard to water supply provision, distribution, or reuse.

The projects listed below are from the Miami-Dade County Work Plan, the Miami-Dade Capital Improvement Element/Schedule and Alternate Water Supply and Wastewater Reuse Projects Table.

**TABLE 2 – ALTERNATIVE WATER SUPPLY AND WASTEWATER REUSE PROJECTS 2007-2030**

Project No/ CIE Table. <sup>1</sup>	Project Name <sup>2</sup>	Project Description	Construction Timeframe	Estimated Cost (\$million)
<b>Alternative Water Supply Projects</b>				
17, Table 12	South Miami Heights WTP and Wellfield (20 MGD)	Reverse osmosis and ultra-filtration membranes provide treatment of 20 MGD of Biscayne aquifer water from 10 wells	2007-2012	138.7
20D, Table 12	Hialeah Floridan Aquifer R.O. WTP	A new upper Floridan aquifer reverse osmosis water treatment plant is to be constructed in the northern part of the County (i.e. Hialeah). The WTP will directly utilize the Floridan Aquifer as the alternative water supply using the RO treatment to remove salt.	2007-2012	93
20D, Table 12	Phase 1 (10 MGD)		2015-2018	25
22, Table 12	Phase 2 (5 MGD)		2025-2028	9.7
23, Table 12	Phase 3 (2.5 MGD)			
20A, Table 12	Floridan Aquifer Blending (and ASR) at Alexander Orr, Jr. Water Treatment Plant (7.4 MGD)	This project uses the brackish Floridan Aquifer water to blend with the fresh Biscayne Aquifer raw water. Also these wells will be used for storage of fresh Biscayne Aquifer water in the Floridan Aquifer during the wet season for extraction and use in the dry season.	2007-2007	6.4
20C, Table 12	Floridan Aquifer Blending at Hialeah-Preston WTP (4.7 MGD)	Construction of two Floridan Aquifer blending wells to supply raw water to the Hialeah-Preston WTP complex. This project will blend Floridan Aquifer water with the raw water supply.	2006-2010	10.3
<b>Wastewater Reclamation Projects</b>				
28, Table 8	North District WWTP Reuse Project (1.0 MGD)	Five MGD of this reclaimed water (e.g. purple pipe) irrigation project will be pumped to the City of North Miami Beach and 2 MGD will be used to replace current potable water irrigation in the service area.	2007-2012	26.8
29, Table 8	Central District WWTP Reuse Project (1.0 MGD)	This reclaimed water (e.g. purple pipe) irrigation project will replace potable water irrigation at Crandon Park and certain areas of Key Biscayne.	2007-2012	15.3
30, Table 8	South District WRP Groundwater Recharge Phase 1 (18.6 MGD)	This Groundwater Replenishment project provides advanced treatment to secondary effluent. Technologies include micro-filtration, reverse osmosis and UV light for disinfection. The highly treated reclaimed water would be piped to areas upgradient of the South Miami Heights wellfield and discharged into the groundwater through underground trenches.	2007-2013	357.5
31, Table 8	West District W.R.P. Canal Recharge Phase 2 (21 MGD)	This water reclamation plant project includes the construction of a new wastewater plant incorporating technologies capable of achieving those treatment levels required for canal recharge or any other alternative discharge that may be approved. This plant will be expanded for Phase 3.	2015-2020	298
			2021	217.5
26, Table 8	Biscayne Bay Coastal Wetlands Rehydration (1 MGD)	The Biscayne Bay Coastal Wetland Rehydration program and Aquifer Recharge Pilot studies are projects that will help the County reach its effluent reuse goals. The wetland rehydration process requires thorough removal of nutrients from the reuse water. Results of the pilot project, which will test different treatment technologies and to gain insights in the biological and ecological response of typical wetlands to highly treated effluent, will help to optimize the treatment system and the preferred areas for rehydration to maximize the benefits to the wetlands and to the Bay. The pilot project will lay the foundation for the full scale rehydration project.	2006-2011	19.2
27, Table 8	Aquifer Recharge Pilot Study (20,000 GPD)		2006-2010	1.02
33, Table 8	Biscayne Bay Coastal Wetlands Rehydration Demonstration Project (75.7 MGD)		2010-2021	621

<sup>1</sup> CIE Table References are per Miami-Dade County CIE adopted 3/29/07 and revised by Ordinance No 07-73 adopted on 6/5/07

<sup>2</sup> Project Names are per Miami-Dade County Water Use Permit approved 11/15/07

Source: Miami-Dade County CDMP Water and Sewer Subelement, Table 1

## 5.0 GOALS, OBJECTIVES AND POLICIES

Within both its comprehensive plan and its recent Evaluation and Appraisal Report, the Village has adopted various goals, objectives, and policies that promote the aims of the Work Plan. Still, the adoption of additional goals, objectives, and policies, as suggested below, will help to further promote these aims.

### Future Land Use Element

**Goal 2** Protect and enhance the residential, commercial, resort, and natural resource areas of the Village.

This current goal can be promoted through the addition of a new objective and policy:

**Objective 2.8** Water Supply: Assist Miami-Dade Water and Sewer Department in ensuring there is sufficient water supply for existing and new development in the Village.

**Policy 2.8.1** The Village shall coordinate land uses and future land use changes with the availability of water supplies and water supply facilities.

### Infrastructure Element

**Goal 1** To provide and maintain the public infrastructure in a manner that will insure bay water quality, and public health, safety, and quality of life for Key Biscayne residents.

**Objective 1.5** Water Conservation: Reduce the average daily per capita water consumption by 5% by 2004 (dependent on near-term ability to measure Village-wide consumption).

The EAR recommended the adoption of the following policies into the Infrastructure Element that would promote this goal and objective:

**Policy 1.5.5** The Village shall update the Master Plan within 18 months of the South Florida Regional Water Management District updating its regional water supply plan, highlighting alternative water supply projects, and completing the required "Work Plan Amendment."

**Policy 1.5.6** The Village shall seek and obtain a written statement form the Miami-Dade Water and Sewer Authority regarding the availability of water to serve all proposed development projects, including the current and projected demand, remaining permitted water withdrawals, facility capacity, and scheduled capital improvement projects.

**Policy 1.5.7**            The Village shall establish a single-point-of-contact at the South Florida Water Management District and Miami-Dade Water and Sewer Authority to determine the extent to which the Village will be involved in the planning, financing, construction, and operation of water supply facilities that will serve the community.

**Policy 1.5.8**            The Village shall verify with the Miami-Dade Water and Sewer Authority the availability of water before making changes to the Future Land Use Map.

The above-cited goal and objective can also be promoted through the addition of the following policies under Objective 1.5:

**Policy 1.5.9**            The Village shall protect water quality in traditional and new alternative water supply sources.

**Policy 1.5.10**         The Village shall establish a concurrency monitoring system for water supply to ensure that the level-of-service is satisfied at the building permit stage.

Conservation and Coastal Management Element

**Goal 1**                    To preserve and enhance the significant natural features in Key Biscayne.

This current goal can be promoted through the addition of a new objective and several new policies, as follows:

**Objective 1.8**            Water Supply: Assist Miami-Dade Water and Sewer Department in ensuring there is sufficient water supply for existing and new development in the Village.

**Policy 1.8.1**            The Village shall coordinate land uses and future land use changes with the availability of water supplies and water supply facilities.

**Policy 1.8.2**            The Village shall adopt 155 gallons of water per person per day as its level-of-service standard for residential and nonresidential users.

**Policy 1.8.3**            The Village shall continue to implement the same or more stringent water conservation measures through its land development regulations.

**Policy 1.8.4**            The Village shall conserve potable water resources, including the support of reuse programs and potable water conservation strategies and techniques.

**Policy 1.8.5**            The Village shall implement the Work Plan to ensure that adequate water

supplies and public facilities are available to serve the water supply demands of the Village's population.

**Policy 1.8.6** Since the potable water network is an interconnected, countywide system, the Village's Planning Department shall cooperate with Miami-Dade County Water and Sewer Department to jointly develop methodologies and procedures for biannually updating estimates of system demand and capacity, and ensure that sufficient capacity to serve development exists.

**Policy 1.8.7** If in the future there are issues associated with water supply, conservation or reuse, the Village shall immediately contact the Miami-Dade Water and Sewer Department to address the corresponding issues. In addition, the Village will follow adopted communication protocols with WASD to communicate and/or prepare an appropriate action plan to address any relevant issue associated with water supply, conservation or reuse.

**Policy 1.8.8** The Village shall enforce Miami-Dade County's Water Use Efficiency Standards Ordinance, adopted on February 5, 2008.

**Policy 1.8.9** The Village may consider requiring the use of high-efficiency toilets, showerheads, faucets, clothes washers, and dishwashers in all new and redeveloped residential projects.

**Policy 1.8.10** The Village shall encourage the use of sub-metering for all multi-unit residential developments, including separate meters and monthly records kept of all major water-using functions such as cooling towers and individual buildings, in all new and redeveloped multi-family residential projects.

**Policy 1.8.11** The Village may encourage the use of Florida Friendly Landscapes guidelines and principles; gutter downspouts, roof runoff, and rain harvesting through the use of rain barrels and directing runoff to landscaped areas; drip irrigation or micro-sprinklers; and the use of porous surface materials (bricks, gravel, turf block, mulch, pervious concrete, etc) on walkways, driveways, and patios.

### Intergovernmental Coordination Element

**Goal 1** To maintain or establish processes to assure coordination with other governmental entities where necessary to implement this plan.

The EAR recommended the adoption of the following policy into the Infrastructure Element that would promote this goal:

**Policy 1.3.2** The Village shall implement a tracking system that measures increases in population resulting from development and redevelopment, and provide

results to the Miami-Dade County Water and Sewer Authority on a regular basis.

To better comply with the intent of the Work Plan, Objective 1.3 and Policy 1.3.1 should be amended, as follows:

**Objective 1.3** Level-of-Service Standards Coordination: Ensure coordination with Metro-Dade County, the Miami-Dade Water and Sewer Department, the Miami-Dade County Department of Environmental Resources Management, the South Florida Water Management District, and the Lower East Coast Water Supply Plan Update in establishing LOS standards for sewage and potable water.

**Policy 1.3.1** Monitor changes to LOS standards of Metro-Dade County, the Miami-Dade Water and Sewer Department, the Miami-Dade County Department of Environmental Resources Management, the South Florida Water Management District, and the Lower East Coast Water Supply Plan Update and adjust own LOS standards accordingly.

The above-cited goal and objective can be promoted through the addition of several new policies, as follows:

**Policy 1.3.3** The Village shall provide for improved or additional coordination between the Miami-Dade Water and Sewer Department and the Village concerning the sharing and updating of information to meet ongoing water supply needs.

**Policy 1.3.4** The Village shall coordinate with the Miami-Dade Water and Sewer Department in the implementation of alternative water supply projects, establishment of level-of-service standards, resource allocations, changes in service areas, and potential for annexation.

**Policy 1.3.5** The Village shall coordinate with the Miami-Dade Water and Sewer Department by requiring applications to be reviewed by the Department during the site plan review process prior to approving a building permit, in order to determine whether adequate water supplies will be available to serve the development by the anticipated issuance date of the certificate of occupancy for properties located within the Village. Additional coordination efforts will occur between the Department and the Village through the water allocation system, which is a monthly spreadsheet used for tracking development activity within the Village. The Village will monitor proposed amendments to the Miami-Dade County Comprehensive Development Master Plan as they relate to water supply planning in the county and provide input as necessary.

**Policy 1.3.6**            The Village shall coordinate with the *Lower East Coast Water Supply Plan Update*.

**Policy 1.3.7**            The Village planning director or a representative shall attend the Miami-Dade Planners Technical Committee meeting to share information regarding water supply needs and coordinate water use issue as needed. This committee is a council of professional planners representing local governments and public regulatory review agencies in Miami-Dade County that addresses common concerns and shares resources toward solving planning problems.

The Village shall establish a single point-of-contact at the South Florida Water Management District and the Miami-Dade Water and Sewer Department to determine the extent to which the Village will be involved in the planning, financing, construction, and operation of the water supply facilities that will service the community, regardless of ownership.

**Capital Improvement Element**

**Goal 1**                    To undertake capital improvements necessary to provide adequate infrastructure and a high quality of life, within sound fiscal practices.

**Objective 1.2**            Level of Service and Land Use Decisions: Use FLUP, financial analyses in this element and LOS standards to review development applications and to prepare annual schedule of capital improvements.

**Policy 1.2.1**            Maintain the following peak hour LOS standards. For potable water: Not to exceed 98% of County treatment and storage system’s rated capacity, with at least 20 lbs. per sq. inch at property line and average 280 gallons per capita per day.

The EAR recommended the adoption of the following policy into the Capital Improvement Element that would promote this goal, objective, and policy:

**Policy 1.2.2**            The Village shall implement a tracking system that measures increases in population resulting from development and redevelopment and provide results to the Miami-Dade Water and Sewer Authority on a regular basis.

These aims can be enhanced through the addition of a new policy:

**Policy 1.2.3**            The Village shall develop mechanisms to ensure that adequate water supplies are available to all water users prior to the approval of a building permit. Furthermore, the Village shall monitor the Miami-Dade Water and Sewer Department to be sure that it is responsibly monitoring the availability of water supplies for all water users of its department, which includes the Village of Key Biscayne, and to be sure that it is

implementing a system that links water supplies to the permitting of new development.

## **6.0 CONCLUSION**

The SFWMD has determined that the Biscayne Aquifer water source is challenged to meet future water demands. The WASD currently supplies potable water services to the Village of Key Biscayne through a mutual agreement. The WASD has evaluated the impact of implementing new alternative water sources projects to meet the projected water demands for all their existing and proposed customers.

This Work Plan is formulated to demonstrate that the WASD has the capacity to provide potable water to all their retail customers for the next 10-year planning period. The Village of Key Biscayne must coordinate with the WASD and the SFWMD to continue to research and implement future projects to reduce reliance upon the Biscayne Aquifer.