
INFRASTRUCTURE ELEMENT

DATA INVENTORY AND ANALYSIS

POTABLE WATER

This section evaluates the potable water system serving the Town of Surfside inclusive of all structures designed to collect, treat, and distribute potable water in addition to water wells, treatment plants, reservoirs and distribution mains.

Miami Dade County Water and Sewer Department Geographic Service Area

The Town of Surfside's potable water is provided by a system operated by the Miami-Dade County Water and Sewer Department (MDWASD) which provides service for approximately 2.6 million customers in Miami-Dade County. The MDWASD water service area illustrated in Figure 3.1 (Appendix 4-A Town of Surfside 15-Year Water Supply Facilities Work Plan) is interconnected and functions as a single service area. The Town of Surfside is serviced by the Hialeah-Preston Water Treatment Plant service area which includes the northern part of Miami-Dade County.

The water is distributed to residents and commercial business by approximately 11 miles of cast iron pipe installed in 1938. Primary mains feeding the system run under the Town's streets and vary in size from 6-inch to 16-inches in diameter, which feed three-inch and four-inch water lines located along the rear property lines.

Water Source

The source water for the Hialeah Water Treatment Plant (WTP) is from the Hialeah-Miami Springs Wellfields, supplemented by the Northwest Wellfield. There are three active wells located in the Hialeah Wellfield constructed in 1936. Each well is 14 inches in diameter, 115 feet deep and have casing depths of 80 feet. The total wellfield capacity is 12.54 mgd or 8,700 gpm (2,900 gpm for each well). The twenty active wells located in the Miami Springs Wellfield were constructed between 1924 and 1954. These wells are 14 inches and 30 inches in diameter, 80 to 90 feet deep and have casing depths of 80 feet. The total wellfield capacity is 79.30 mgd or 55,070 gpm (ranging between or 2,500 and 5,000 gpm for each well). The Northwest Wellfield has fifteen active wells that were constructed in 1980. The wells are 40 inches and 48 inches diameter and 80 to 100 feet deep, with casing depths ranging from 46 to 57 feet. These wells have two-speed motors. The total nominal capacity of the wells at the low speed flow rate is 149.35 mgd. The capacity of each well, except well No. 10, is 10 mgd at the low speed flow rate. Well No. 10 has a low speed capacity of 9.35 mgd. The total nominal capacity for the wells at the high speed flow is 220.94 mgd.

The seven active wells located in the John E. Preston Wellfield were constructed in 1966 and 1972. Each well is 42 inches in diameter, 107 feet deep and have casing depths of 66. The capacity of wells No. 1 through No. 6 is 5,000 gallons per minute (gpm) each and the capacity of well No. 7 is 7,000 gpm. The total wellfield capacity is 53.28 mgd.

Water Treatment Plants (WTPs)

The Hialeah WTP was originally designed in 1924 with a total capacity of 10 mgd. By 1935, the plant’s capacity totaled 40 mgd. In 1946, capacity was increased to 60 mgd. Air strippers with a capacity of 84 mgd were added to the treatment process in 1991 to remove volatile organics from the finished water. A 3.2 MG storage reservoir for both the Hialeah and John E. Preston WTPs was also added in 1991. The Hialeah WTP has a current rated capacity of 60 mgd and there are plans to rerate and upgrade the Hialeah WTP to a capacity of 70 mgd, if necessary. The treatment process for this WTP includes lime softening with sodium silicate activated by chlorine, recarbonation, chlorination, ammoniation, fluoridation, filtration, and air stripping. The plant site is relatively small, and is surrounded by residential areas.

The John E. Preston WTP was originally designed as a 60 mgd plant in 1968 and upgraded to 110 mgd in 1980. The plant was re-rated to a total capacity of 130 mgd in 1984. The plant reached its present capacity of 165 mgd with another addition in 1988. In 1991, the plant was modified with an air stripping capacity of 185 mgd to remove VOCs. In 2005, plant process modifications to provide enhanced softening for reduction of color and total organic carbon came on line. The main source of water for the Preston WTP is from the Northwest Wellfield. The current rated capacity is 165 mgd with a treatment process similar to that of the Hialeah WTP. This includes lime softening with ferric and other coagulant and chemicals added prior to lime for enhanced softening, recarbonation, chlorination, ammoniation, fluoridation, filtration, and air stripping. The Preston plant is also located in a residential area of Hialeah.

Potable Water Level of Service

The Town of Surfside currently coordinates with MDWASD and the South Florida Water Management District to meet existing and projected demands based on level of service (LOS). MDWASD’s projected water demands shown in **Table 4-1** below were developed utilizing an average gallons per capita per day (gpcd) value of 137.2 gpcd.

**Table 4-1
Miami-Dade Water and Sewer Department (MDWASD) Water Demand Projection**

Year	Population	Finished Water Use (gpcd)	AADD Finished Water Use (MGD)	Water Conservation Credit (MGD)	Reuse Reclaimed Water Credit	Adjusted Finished Water Demand (MGD)	Adjusted Finished Water Use (gpcd)
2015	2,266,092	137.2	310.84	2.04	0.00	308.80	136.27
2020	2,370,769	137.2	325.20	5.44	0.00	319.76	134.88
2025	2,475,446	137.2	339.56	8.84	0.00	330.72	133.60
2030	2,580,123	137.2	353.92	9.55	0.00	344.37	133.47

Source: MDWASD’s 20 year water supply plan (2014-2033)

Table 4.2 provides the projected water use for Year 2015 through Year 2030 for the Town of Surfside utilizing the finished water use rate of 148.04 gallons per capita per day.

**Table 4-2
Town of Surfside Water Demand Projection**

Year	Population	Per Capita Consumption	Projected Consumption	Projected Consumption
		GPCD	GPD	MGD
2015	5,866	148.04	868,399	.87
2020	6,019	148.04	891,073	.89
2025	6,173	148.04	913,747	.91
2030	6,326	148.04	936,421	.94

Figure 4.1 in the Town of Surfside 15-Year Water Supply Facilities Work Plan indicates that there will be no deficit of finished water through 2030.

To assure adequate level of service, potable water facilities shall meet the following level of service standards as identified in the MDWASD goals for potable water:

- (a) The regional treatment system shall operate with a rated maximum daily capacity no less than 2 percent above the maximum daily flow for the preceding year, and an average daily capacity 2 percent above the average daily system demand for the preceding 5 years. The maximum daily flow shall be determined by calculating the average of the highest five single day flows for the previous 12 months.
- (b) Water shall be delivered to users at a pressure no less than 20 pounds per square inch (psi) and no greater than 100 psi. Unless otherwise approved by the Miami-Dade Fire Rescue Department, minimum fire flows based on the land use served shall be maintained as follows:

Land Use	Min. Fire Flow (gpm)
Single Family Residential Estate	500
Single Family and Duplex; Residential on minimum lots of 7,500 sf	750
Multi-Family Residential;	1,500
Semiprofessional Offices	1,500
Hospitals; Schools	2,000
Business and Industry	3,000

Source: Miami-Dade County Adopted 2014 Water, Sewer and Solid Waste Element

Storage Capacity

The finished water storage facilities for the Hialeah-Preston subarea consist of both “in-plant” and remote storage facilities. The total combined storage capacity between both plants inclusive of remote storage facilities is 56.0 MG. Additional information on MDWASD’s finished water storage facility capacities can be found in Table 3.1 of Appendix A (Town of Surfside 15-Year Water Supply Facilities Work Plan).

Water Supply Facilities Work Plan

The purpose of the Town of Surfside 15-Year Water Supply Facilities Work Plan (Work Plan) is to identify and plan for the water supply sources, as well as facilities needed to serve the existing and new development within the local government’s jurisdiction. Chapter 163, Part II, F.S., requires local governments to prepare and adopt Work Plans into their Comprehensive Plans

within 18 months after the water management district approves a regional water supply plan. Surfside adopted their Work Plan in December 2015.

On a regional level, the Town falls within the South Florida Water Management District (SFWMD) and within the SFWMD's Lower East Coast (LEC) Planning Area. The *2013 Lower East Coast Water Supply Plan Update* (2013 LEC Plan Update), approved by the SFWMD in September 2013, is one of five, long-term comprehensive regional water supply plan updates the SFWMD has developed for its planning areas. The planning horizon for the 2013 LEC Plan Update is 2010-2030.

SANITARY SEWER

The sanitary sewer system is defined as structures or systems designed for the collection, transmission, treatment, or disposal of sewage and may include trunk mains, interceptors, treatment facilities, and disposal systems. The Town's sanitary sewer system is interconnected with the Miami-Dade County Water and Sewer Department (MDWASD) system. Surfside maintains its own sewer collection system and two pumping stations. By agreement, the Town of Surfside and Bal Harbour share a sanitary force main that connects to the City of Miami Beach transmission system. The tri-party agreement provides for the transmission of sewage via force mains to the MDWASD system and eventually to the treatment plant and disposal.

Geographic Service Area

The Town of Surfside's sanitary sewer system is part of a system run by MDWASD. The Town's system is coextensive with the Town's boundaries. The County system includes unincorporated and incorporated areas of Miami-Dade County inside the 2005 Urban Development Boundary that have an agreement with MDWASD. The system also incorporates a small number of facilities, mostly State or County owned, outside of the Urban Development Boundary.

Treatment Facilities and Capacity

There has been a significant reduction in average flow into the regional system as a result of extensive infiltration and inflow (groundwater and rainwater) prevention projects conducted by MDWASD in recent years. Infiltration and inflow within the sewer system should be kept at a minimum to avoid hydraulic overload to the receiving treatment plant. It is pertinent for an operation and maintenance plan to be part of the county's sanitary sewer system. As a result, the regional wastewater treatment plants operating capacity can remain in compliance with Miami-Dade County MDWASD and Florida Department of Environmental Protection (FDEP) standards.

The Town of Surfside is located in the MDWASD Central District Sanitary sewer system; however, MDWASD operates two additional regional wastewater treatment plants in the North and South Districts. Because the system is interconnected, the service districts have flexible boundaries, and some flows from one district can be diverted to other plants in the system.

The Town of Surfside's sewer system is treated by a secondary treatment facility on Virginia Key owned and operated by the Miami-Dade County Water and Sewer Department (MDWASD). The Town's sanitary sewer collection system is divided into two basins. Sanitary sewer pipes range in size from 8 to 15 inches with flows directed to two pump stations. Pump Station 1 receives sewage from the area of Surfside north of 91st Street, which includes the Business District and a majority of the high rise buildings. Pump Station 2 serves the remainder of the Town, including most of the waterfront lots. The sewage is pumped via the force main which runs along 89th Street, 93rd Street, Collins Avenue and connects to the City of Miami Beach's system near 74th street. Sewage continues under pressure through MDWASD force mains to Virginia Key.

Current Facility Demand

According to the Town of Surfside Consumption Analysis, in 2014/2015 approximately 258 million gallons of wastewater were treated by the County system from the Town of Surfside and 260 million in 2015/2016.

In FY08, the Town began mapping all sewer and potable water lines within the municipal boundary to enhance maintenance. Also in FY09, the Town identified infiltration issues to the sanitary sewer system and has begun a program to seal manholes and smoke/video testing to identify and repair broken lines. Table 4-2A shows projected sewage flow demand for the Town of Surfside and Table 4-2B show current and projected waste water capacity for the entire county.

In 2010 to 2014, the Town completed a sanitary sewer rehabilitation plan. All existing gravity sewer mains and laterals were lined or reconstructed in accordance with the approved plan. All sanitary manholes were rehabilitated. The Town also completed rehabilitation of the existing sanitary sewer pump stations, and construction of 12” Force Mains along 93rd Street and 89th Street. The Force Mains were tied-in to the newly constructed 16” Force Main along Collins Avenue. The existing Force Main that runs along Byron Avenue is not currently in use and only remains as a stand-by facility.

Since the Town completed the sanitary sewer rehabilitation plan of the existing system in the recent past, there are currently not additional level of service projects required or needed for the Town’s sanitary sewer system.

**Table 4-2A
Projected Sewage Flows**

PROJECTED SEWAGE FLOWS			
Year	2010 (actual)	2020	2030
Population	5,744	5,952	6,398
Per Capita (gallons per day finished sewage)	155	155	155
(all potable volumes are finished sewage)	MGD	MGD	MGD
Sewage Total Flow (daily average annual)	0.89	0.92	0.99

Source: Calvin, Giordano & Associates, Inc. 2017

The County’s LOS standard requires that the “system” component of the wastewater facility operate below 102 percent of the previous year’s average daily flow. A comparison of the projected treatment capacity to the 102 percent of the previous year’s average annual daily flow (AADF) requirement, from 2016 to 2026, is presented below. According to the County’s data, the capacity of the MDWASD sanitary sewer system will continue to remain below the 102 percent requirement through 2026. The below table confirms the availability of the sanitary sewer system to meet the needs of Surfside in the short term and long term planning period.

Table 4-2B
Miami-Dade County Current and Projected Wastewater System Capacity 2016-2026

County WWTP Capacities		Actual County Flow (mgd)	Total Permitted Capacity / Projected County Flows (mgd)		
	2016 Plant Capacity (mgd)	Dec. 2015	2022	2024	2026
North	120.0	89.3	120.0 / N/A ¹	120.0 / N/A ¹	85.0 / N/A ¹
Central	143.0	120.0	143.0 / N/A ¹	143.0 / N/A ¹	83.0 / N/A ¹
South	112.5	97.1	121.0 / N/A ¹	131.0 / N/A ¹	131.0 / N/A ¹
West	N/A	N/A	N/A	N/A	102.0 / N/A ¹
Total	375.5	306.4	384.0 / 321.1	394.0 / 326.3	401.1 / 331.6

Source: Miami-Dade Water and Sewer Department, 2016; ¹County only has projected data for total regional system

DRAINAGE

In 2013, the Town completed a major retrofit of the existing drainage systems. The existing storm drainage system consisted of a network of underground storm sewers and outfalls discharging directly into Indian Creek and Biscayne Bay. An existing pumping station at the western end of 92nd Street assisted the drainage of water from that street by pumping to an outfall. Storm sewers in the existing system ranged in diameter from 10 inches to 36 inches.

Town of Surfside has two state roadways within the Town; a north-south pair SR A1A/Collins Ave (northbound) and Harding Avenue (southbound); and one east-west SR-922/96th Street. The Florida Department of Transportation (FDOT) provided storm drainage improvements on Harding and Collins Avenue in the early 1990's. Equipment which currently serves the 92nd Street pump station were replaced by FDOT and maintained by the Town; however, even with these modifications, water may still reach curb level in various locations due to tidal fluctuations. The water level of Biscayne Bay is higher than normal during storm periods and high tide, creating a back up in the outfall pipes. The Harding and Collins storm drainage improvements utilize on-site wells and control structures to provide additional capacity.

In 2002, FDOT completed the Stormwater Pump Station System Operational Evaluation and Recommended Improvements (OERI) Report which provided three alternatives to improve stormwater pump systems along Harding. It was determined that the most feasible alternatives are those that have an appropriate overflow capacity, once the wells reach capacity. This was achieved by introducing an emergency gravity bypass in the event that the pumps fail. The alternative consists of new pump stations at the existing vault locations. These new stations required the existing gravity system to be extended to the Intracoastal Waterway seawalls (at 88th Street and 94th Street), a new 36-inch force main to connected to the existing wells; new pumps, structures, controls, and a new gravity bypass drainage pipe.

In 2006, the Town of Surfside initiated another stormwater project, which consists of retrofitting three of the Town's outfall pipes to reduce pollutants and fresh water entering Biscayne Bay. The facilities at each location will consist of three new stormwater pump stations which pump water into drainage wells. In order to address pollution concerns for a Florida Department of

Environmental Protection (FDEP) drainage well permit, the Town installed Nutrient Separating Baffle Boxes upstream of the pump station to provide treatment before the runoff enters the groundwater which was included in this retrofit project.

The recently constructed retrofitted stormwater management system of the Town consists of a network of underground storm sewers along with outfall control structures discharging into Indian Creek and Biscayne Bay, and three additional pump stations discharging into 9 drainage wells. The newly constructed control structures facilitate well discharge before discharging to Biscayne Bay. The project addressed long-term concerns regarding water backing into the streets and poor water quality in the adjacent Biscayne Bay along the Town’s shores. The project directly addressed The Trust for Public Land’s Biscayne Bay Accessibility report, supported the SFWMD’s Biscayne Bay Partnership Initiative (BBPI), and enhanced the level of service.

In 2015, the Town completed drainage improvements for Biscaya Island along 88th Street. The Town constructed new check valves to prevent back flow into the existing roadways and upsized one 12-inch outfall to a 24-inch diameter outfall. Since the Town completed the retrofit of the existing drainage system in the recent past, there are currently not additional level of service projects required or needed for the Town’s drainage system.

SOLID WASTE

The Town’s Public Works Department has three garbage trucks which collect trash and garbage on a weekly basis and haul it to Miami-Dade County’s Resource Recovery Plant west of Miami International Airport and other Miami-Dade County landfills. Last year (FY15/16) Surfside deposited approximately 4,932 tons of waste material at the County’s facility. Based on the 2010 U.S. Census population of 5,744 a volume of just 4.7 pounds per person per day was calculated. The Town, as of June 2, 2016, discontinued recycling services with Miami-Dade County for residential properties. The Town now collects recycling. Between June 2, 2016 and December 29, 2016 the Town collected a total of 218.9 tons of recycling. Based on information supplied by the Miami-Dade County Department of Solid Waste Management (Table 4-3), the existing disposal capacity at the North Dade Landfill and the South Dade Landfill and the Resource Recovery Plan appear to have adequate capacity to meet Surfside’s needs for the foreseeable future.

**Table 4-3
Miami-Dade County Solid Waste Facility Capacity**

	South Dade Landfill	North Dade Landfill	Resources Recovery Facility and Ashfill
Built out Capacity in Tons	23,208,000	13,526,000	8,060,000
Tons in Place (June 30, 2016)	17,547,000	11,984,000	5,765,000
Remaining Capacity in Tons	1,261,000	1,541,000	2,295,000
Last Year’s Disposal Tonnage (7/1/15 – 6/30/16)	390,626	190,478	160,879
Estimated Average Disposal Rate per Year in Tons	400,800	183,900	168,500

Source: Miami-Dade County Department of Solid Waste Management, 2016; Landfill Capacity Analysis for DSWM Active Landfills, July 1, 2016.

There is sufficient capacity in Miami-Dade County landfills to meet the Town’s needs for solid waste disposal for the short term and long term planning horizons.

NATURAL GROUNDWATER AQUIFER RECHARGE

The principal ground water resources for the Lower East Coast (LEC) Planning Area are the Surficial Aquifer System (SAS), including the Biscayne Aquifer, and the Floridan Aquifer System (FAS). The Surficial and Biscayne aquifers provide more than 1 billion gallons a day for public water supply and other uses such as agriculture and landscape irrigation within the LEC Planning Area.

Although the Biscayne Aquifer is part of the Surficial Aquifer System (SAS), it exists only along the coastal areas in Miami-Dade, Broward and southern Palm Beach counties. The Biscayne Aquifer is highly productive with high-quality fresh water. The extension of the SAS through central and northern Palm Beach County is less productive, but is still used for consumptive uses, including potable water. These aquifers are shallow, generally located within 200 feet of ground surface, and are connected to surface water systems, including canals, lakes and wetlands.

The Biscayne Aquifer and the extension of the SAS into northern Palm Beach County provide more than 1 billion gallons per day of high-quality, inexpensive fresh water for the populations of Palm Beach, Broward and Miami-Dade counties and the Florida Keys portion of Monroe County. In 2010, fresh groundwater accounted for 94 percent of potable water produced by public water supply utilities.

This volume is heavily supported, especially during the annual dry season, as well as in periodic droughts, by water from the regional system, primarily the Everglades. During droughts, water from Lake Okeechobee has been required to supplement water from the Everglades to meet the needs of the coastal counties. In 2008, the United States Army Corps of Engineers (USACE) implemented the “2008 Lake Okeechobee Federal Regulation Schedule,” lowering the operation levels at the lake to reduce the risk of dike failure and minimize impacts to the lake’s ecology. This resulted in a projected decline in the level of certainty for agriculture users to rely on the lake, and increased the expectation that the lake would exceed its minimum flow and levels criteria more frequently. In response, the South Florida Water Management District (SFWMD) adopted regulatory criteria to limit future additional withdrawals from Lake Okeechobee and connected water bodies to protect the lake and prevent further erosion to the level of certainty for existing legal users. The Okeechobee Utility Authority in the Kissimmee Basin Planning Area is the only remaining utility using water directly from Lake Okeechobee. Since the 2005-2006 LEC Plan update, Clewiston, South Bay, Belle Glade, and Pahokee have all discontinued the use of Lake Okeechobee as their supply source and now use Floridan Aquifer System water treated by reverse osmosis.

The Biscayne Aquifer is designated as a sole source aquifer by the U.S. Environmental Protection Agency (USEPA) under the *Safe Drinking Water Act* because it is a principal source of drinking water and is highly susceptible to contamination due to its high permeability and proximity to land surface in many locations. As of the 2013 LEC Plan Update, SFWMD has placed limitations on additional allocations from the Biscayne Aquifer. As a result, use of alternative water sources has expanded and a Comprehensive Water Conservation Program has been adopted by SFWMD.

The Floridan Aquifer System (FAS) exists not just in the LEC Planning Area, but throughout the entire state and portions of adjacent states. The Upper Floridan Aquifer in southeast Florida contains brackish water, and is increasingly being tapped as a source of raw water for treatment with reverse osmosis (RO) to create potable water. Brackish water from the Floridan Aquifer is also blended with fresh water prior to conventional water treatment to expand water supplies during the dry season. Additionally, the Floridan Aquifer is used for seasonal storage of treated

fresh water within aquifer storage and recovery (ASR) systems. Until recent years, the Floridan Aquifer was more extensively developed in the Upper East Coast (UEC) and Lower West Coast (LWC) planning areas of the South Florida Water Management District (SFWMD or District) than in the LEC Planning Area.

From Jupiter to southern Miami, water from the FAS is highly mineralized and not suitable for drinking water without specialized treatment. More than 600 feet of low permeability sediments confine this aquifer and create artesian conditions in the LEC Planning Area. Although the potentiometric surface of the aquifer is above land surface, the low permeability units of the intermediate confining unit prevent significant upward migration of saline waters into the shallower freshwater aquifers.

The top of the Upper Floridan Aquifer is approximately 900 feet in southeast Florida, and the base of the Upper Floridan extends as deep as 1,500 feet. At the base of the Lower Floridan Aquifer, there are cavernous zones with extremely high transmissivities collectively known as the boulder zone. Because of their depth and high salinity, these deeper zones of the Lower Floridan Aquifer are used primarily for disposal of treated wastewater.

The Miami-Dade Water Supply Facilities Work Plan outlines a number of Alternative Water Supply (AWS) and conservation strategies designed to protect water sources and comply with recent regulations limiting withdrawals and allocations and eliminating the use of existing ocean outfalls.

Wellfield Protection Areas

There are no wellfield protection areas within the Town of Surfside.

Infrastructure Element Goals, Objectives and Policies

Goal 1: Public utilities capacity shall be provided to adequately serve residents, visitors and business people.

Objective 1 –Ensure sufficient capacity of potable water and sanitary sewer facilities:

In general, ensure sufficient potable water and sanitary sewer system capacity in the most cost effective manner possible. This objective shall be made measurable by its implementing policies.

Policy 1.1 – The Town shall continue use of Miami-Dade County Water and Sewer Department facilities at the Central District Wastewater Treatment Plant on Virginia Key and the Hialeah/Preston Water Treatment Plant or such other Miami-Dade County facilities as may be appropriate.

Policy 1.2 – The Town shall upgrade the potable water distribution system and the sanitary sewer collection system through ongoing maintenance.

Policy 1.3 – The Town shall continue to follow the Sanitary Sewer Evaluation Study (SSES) protocols for Phases I, II, and III, including the testing and implementation of improvements/repairs of the collection system.

Policy 1.4 – Projects and programs shall be funded to maintain adequate levels of service.

Policy 1.5 – The Town shall maintain a minimum of a five-year schedule of capital improvements for the expansion and upgrade in the capacity of water and sanitary sewage facilities in accordance with the Water Supply Facilities Work Plan.

Policy 1.6 – The Town shall maintain a Water Supply Facilities Work Plan with a minimum planning horizon of at least 10 years, and shall ensure coordination between land uses and future water supply planning within 18 months of the adoption of the Lower East Coast Water Supply Plan, or its update, as required by Chapter 163, Florida Statute.

Policy 1.7 – The Town of Surfside 15-Year Water Supply Facilities Work Plan dated December 2015 is hereby adopted by reference into the Comprehensive Plan, along with the Miami Dade Water and Sewer Department 20-Year Water Supply Facilities Work Plan (2014–2033) inclusive of all potable water projects. The Work Plan will be updated as needed, or concurrent with any updates to the Miami-Dade Water and Sewer Department 20-Year Water Supply Facilities Work Plan (2014-2033).

Policy 1.8 – The Town of Surfside 15-Year Water Supply Facilities Work Plan shall be consistent with the Potable Water Level of Service standards as established in the Comprehensive Plan.

Policy 1.9 – The Town’s 15-Year Water Supply Facilities Work Plan shall guide future expansion and upgrade of facilities needed to transmit and distribute potable water to meet current and future demands. The Town shall research and identify alternative, renewable sources of water to the projected increases in demand.

Policy 1.10 – The Town shall provide for the protection of water quality when using traditional and new alternative water supply sources.

Policy 1.11 – The Town shall identify traditional and alternative water supply projects and the conservation and reuse programs to meet current and future water use demands within the Town’s jurisdiction consistent with the Miami-Dade County 20-Year Water Supply Facilities Work Plan and the South Florida Water Management District’s Water Supply Plan.

Policy 1.12 – The Town shall issue no development order unless the Miami-Dade Water and Sewer Department (MDWASD) certifies that adequate potable water supply is available for new development. The Town shall provide monthly reports to MDWASD, as required, to track the amount of water to be allocated for new uses.

Objective 2 – Correct deficiencies and increase capacity of drainage facilities: Optimize the utilization of water resources through the provision of stormwater management for the Town which reduces damage and inconvenience from flooding, promotes aquifer recharge, and minimizes degradation of water quality in surface water bodies.

Policy 2.1 – For site plan approval, the Town shall require that surface water management systems be designed and operated consistent with the Town’s adopted drainage level of service.

Policy 2.2 – Financially feasible projects and programs shall be implemented in order to maintain adequate level of service standards, and to make preventative improvements to the system.

Policy 2.3 – The Town shall implement the stormwater improvement projects specified in the State of Florida Department of Environmental Protection (DEP) Agreement No. LP6768.

Policy 2.4 – The Town shall construct the Stormwater Treatment Trains and Rehabilitation projects specified in the State of Florida Department of Environmental Protection (DEP) Agreement No. S0374.

Policy 2.5 – The Town shall adhere to the National Pollution Discharge Elimination System-Municipal Separate Storm Sewer System (NPDES-MS4) Permit and shall implement the permit conditions including monitoring of outfalls and improving stormwater management practices.

Policy 2.6 – The Town shall use Best Management Practices (BMPs) in accordance with its regulations and those of the South Florida Water Management District (SFWMD) and DERM.

Policy 2.7 – The Town shall coordinate and cooperate with all applicable local, regional, state and federal agencies relating to the protection and enhancement of the Biscayne Bay Aquatic Preserve.

Objective 3: Maintain sufficient solid waste capacity. The Town shall support Miami-Dade County in its provision of solid waste management facilities available to meet the Town’s short-term and long-term future needs.

Policy 3.1 – The Town shall require in the land development regulations that applicants for development permits demonstrate adequacy of solid waste disposal sites or facilities prior to occupancy.

Policy 3.2 – The Town shall cooperate with Miami-Dade County to further preserve landfill space, examine the need for a comprehensive countywide yard waste program and establish clear policies regarding the construction and debris waste stream.

Objective 4 – Level of service: Achieve adequate facility capacity to serve existing development and new development concurrent with the impact of that development. Achievement of this objective shall be measured by the implementation of the following policies:

Policy 4.1 – The Town will enforce the following level of service standards as identified in the MDWASD goals for potable water:

Sanitary Sewers: The County-wide “maximum day flow” of the preceding year shall not exceed 102 percent of the County treatment system's rated capacity. The sewage generation standard shall be 155 average gallons per capita per day.

Potable Water:

- (a) the regional treatment system shall operate with a rated maximum daily capacity no less than 2 percent above the maximum daily flow for the preceding year, and an average daily capacity 2 percent above the average daily system demand for the preceding 5 years. The maximum daily flow shall be determined by calculating the average of the highest five single day flows for the previous 12 months.
- (b) Water shall be delivered to users at a pressure no less than 20 pounds per square inch (psi) and no greater than 100 psi. Unless otherwise approved by the Miami-Dade Fire Rescue Department, minimum fire flows based on the land use served shall be maintained as follows:

Land Use	Min. Fire Flow (gpm)
Single Family Residential Estate	500
Single Family and Duplex; Residential on minimum lots of 7,500 sf	750
Multi-Family Residential	1,500
Semiprofessional Offices	
Hospitals; Schools	2,000
Business and Industry	3,000

Drainage: All nonresidential development and redevelopment shall adequately accommodate runoff to meet all Federal, state and local requirements. Stormwater shall be treated in accordance with the provisions of Chapter 17-25, FAC in order to meet receiving water standards in Chapter 17-302.500, FAC. One inch of runoff shall be retained on site. Post-development runoff shall not exceed peak pre development runoff.

Solid Waste: The County solid waste disposal system shall maintain a minimum of five years capacity. For Town planning purposes, a generation rate of 5.2 pounds per person per calendar day shall be used.

Objective 5 – Water conservation: Conserve and protect potable water resources by optimizing the utilization of water resources through effective water management practices.

Policy 5.1 – The Town shall maintain and improve land development code and other regulations that include: 1) water conservation-based irrigation requirements; 2) water conservation-based plant species requirements derived from the South Florida Water Management District's list of native species and other appropriate sources; 3) lawn watering restrictions; 4) mandatory use of high-efficiency water saving devices for substantial rehabilitation and new construction; and 5) other water conservation measures, as feasible.

Policy 5.2 – The Town shall promote education programs for residential, commercial and other uses which will discourage waste and conserve potable water.

Objective 6 – Infrastructure resiliency: Ensure resiliency of existing and future water resources, and water, wastewater and storm water infrastructure to the impacts of climate change and consider the development of adaptation for areas vulnerable to climate change-related impacts.

Policy 6.1 – Coordinate with Miami-Dade County to assess the adequacy of water supply and water/wastewater facilities and infrastructure to effectively capture, store, treat, and distribute potable water and reuse under variable climate conditions, including changes in rainfall patterns, sea level rise, and flooding, with potential water quality and quantity impacts.

Policy 6.2 – Coordinate adaptive management implementation strategies for water and wastewater resources that address the potential impacts of climate change for long term operations.

Policy 6.3 – Evaluate cost/benefit analysis for implementing adaptive management strategies including; planning, siting, construction, replacement and maintenance of public infrastructure as well as fortification or retrofitting of existing infrastructure.

Policy 6.4 – Work with Miami-Dade County to develop water demand projection scenarios that account for potential changes in demands if temperatures increase and drought conditions become more frequent or persistent.

Policy 6.5 – Evaluate infiltration and inflow programs to strategically reduce the flow of groundwater and stormwater and stormwater to wastewater collection and treatment facilities.

Policy 6.6 - The Town of Surfside shall continue to conduct a review and identify feasible regulations that require new construction, redevelopment, additions, retrofits or modifications of property to incorporate porous materials, reduce total impervious area, and employ other techniques to reduce run-off, capture and reuse rain water, and recharge the Biscayne Aquifer.

Policy 6.7 - The Town shall continue to identify public investments and infrastructure at risk from sea level rise and other climate change related impacts, and update this assessment every 5 years. Specifically, the Town shall analyze vulnerability to facilities and services, including but not limited to: buildings; water and wastewater infrastructure, transmission lines and pumping stations; stormwater systems; roads, bridges, and all transportation and transit infrastructure; power generation facilities and power transmission infrastructure; critical infrastructure such as city hall, police and fire stations.

Policy 6.8 - The Town shall coordinate with Miami-Dade County in improving the resiliency of existing water resources and water and wastewater infrastructure to climate change impacts, while improving energy efficiency and reducing greenhouse gas emissions.

Policy 6.9 - The Town of Surfside shall consider the installation of backflow preventers on drainage systems that discharge to Biscayne Bay in coordination with the appropriate agencies.

Policy 6.10 - The Town of Surfside shall construct the additional stormwater drainage infrastructure necessary to accommodate projected increases in stormwater, including drainage wells, injection wells, swales, bioswales, and other related structures.