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2025-2035 Water Supply Work Plan City of Flagler Beach

April 2025

CITY OF FLAGLER BEACH FLORIDA

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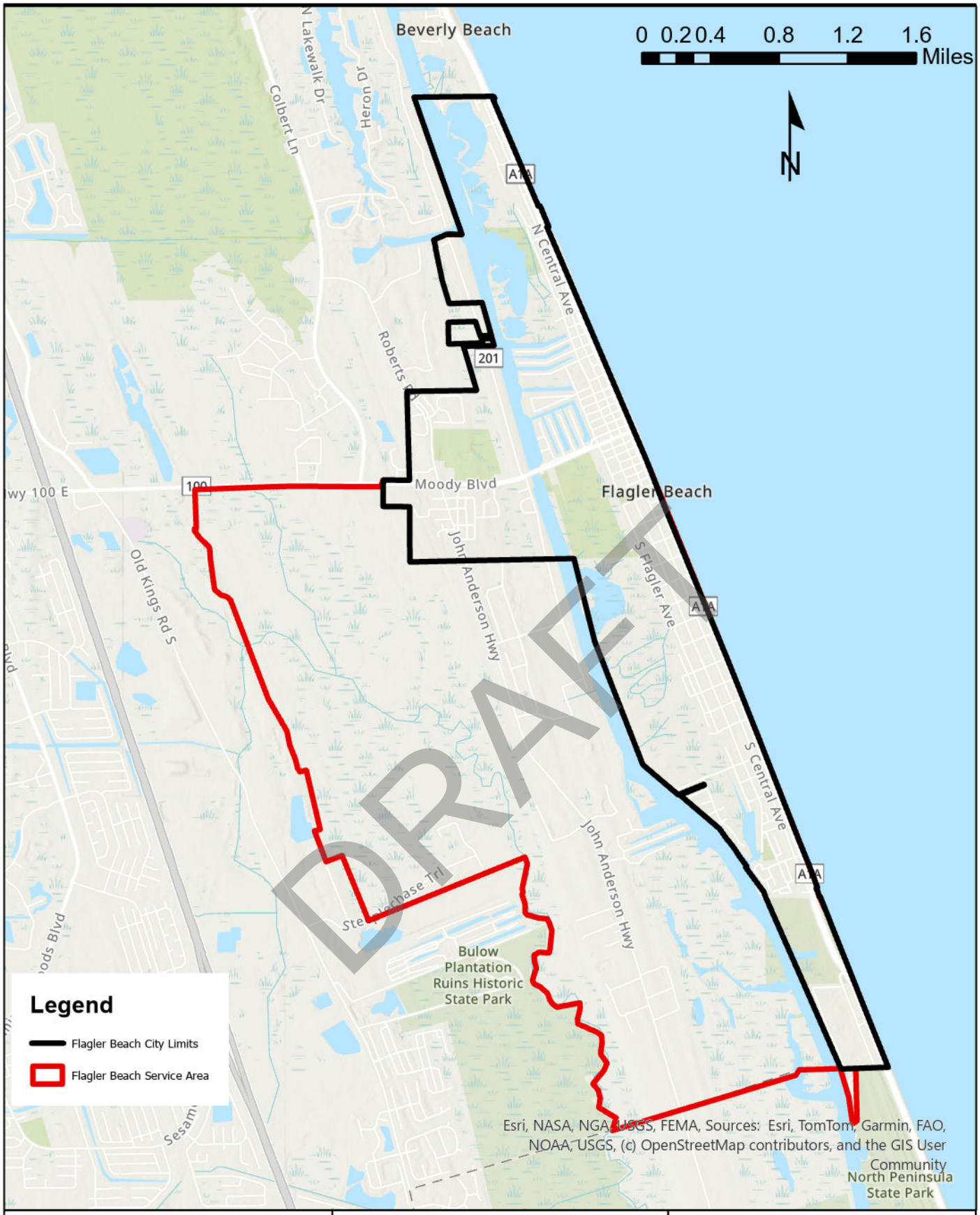
1. Introduction

The North Florida Regional Water Supply Plan (2020-2045) [NFRWSP] was approved by the St. Johns River Water Management District's (SJRWMD's) Governing Board on December 12, 2023. The NFRWSP was developed as part of the North Florida Regional Water Supply Partnership in coordination with the Suwannee River Water Management District. In accordance with Section 163.3177(6)(c), Florida Statutes (F.S.), local governments within the NFRWSP area are required to amend their comprehensive plans to include a new or updated a Water Supply Facilities Work Plan (WSFWP). A WSFWP and its related comprehensive plan amendment identify and plan for the water supply sources and facilities needed to serve existing and new development within a local government's jurisdiction.

The planning period for this WSFWP is 2025-2035. At a minimum, it will be necessary to update the WSFWP prior to the end of the planning period, or at such time as SJRWMD updates the NFRWSP. Public Facilities Element Policy D.1.7.1 contains enabling language that incorporates the WSFWP into the comprehensive plan as Appendix A of the Public Facilities Element. Intergovernmental Coordination Element policies G.1.4.4, G.1.4.5, G.1.4.6, G.1.4.7 contain enabling language to ensure maintenance of the work plan and coordination of the City's comprehensive plan with SJRWMD's NFRWSP.



City of Flagler Beach Water Supply Facilities Work Plan

Figure 1- Potable Water Service Area

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2. Potable Water Supplier Information

21 Service Area and Agreements

The City of Flagler Beach is located South of Palm Coast and North of Ormond Beach. It has a municipal boundary and a utility service area encompassing approximately 10.3 square miles, as shown in **Figure 1**. The utility service area does not overlap into any other unincorporated or incorporated areas. The current utility planning area has a population of 5,550. The City is the only potable water supplier within its municipal limit, which includes sections of the City located on both the mainland and barrier islands. In addition, the City provides sewer service to a portion of the City of Palm Coast. Palm Coast reimburses the City of Flagler Beach each month for the sewer services. The City of Flagler Beach also provides water and sewer service to Ocean Palm Villas South Condos in northeast Volusia County. This service is not a wholesale agreement.

In January 2007, the City, Flagler County, the City of Palm Coast, and a private developer (i.e., The Gardens at Hammock Beach Property Owners Association, Inc) entered into a stipulated settlement agreement that delineated the water and wastewater services areas for each utility provider. The City is financially responsible for the maintenance and improvements to the potable water system within its service area. The City currently has no plans to expand its potable water service area within the next ten years.

The City has interlocal agreements with the City of Palm Coast, the City of Beverly Beach, and Flagler County for emergency interconnects. The purposes of these interconnects are so that either City/County may effectively provide water service to the other to deal with potential public emergencies caused by water shortages. Intergovernmental Coordination Element Policy G.1.4.4 and G.1.4.5 contains enabling language for the City's intergovernmental agreements relative to water supply, service, and planning. In addition, Intergovernmental Coordination Element Policy G.1.4.6 contains enabling language for this coordination activity.

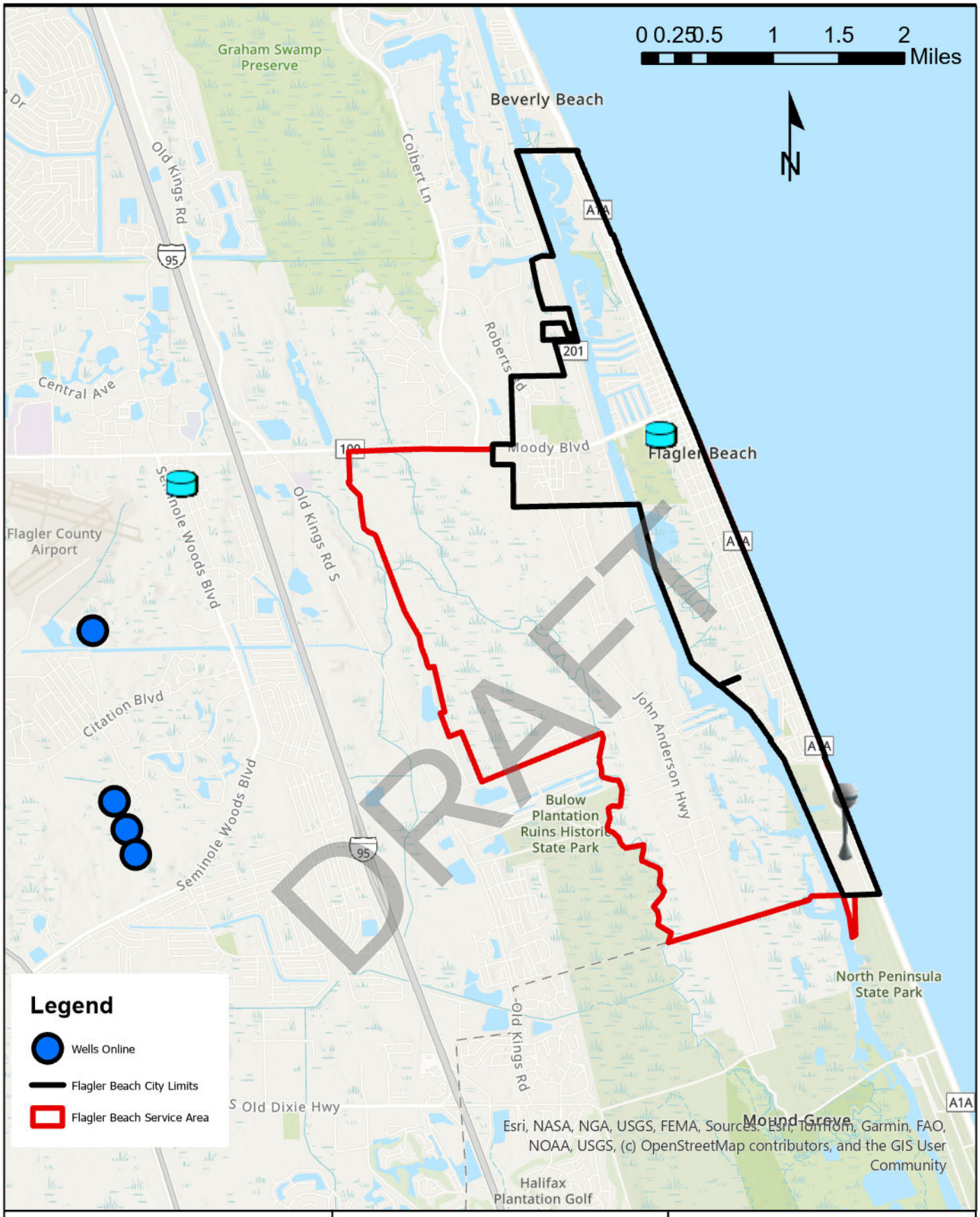
22 Potable Water System Inventory

The City's wellfield is located outside City limits, in unincorporated Flagler County, just south of the Flagler County airport. Currently, the City has four active wells Upper Floridan aquifer wells for public supply with two more (Wells #17 & #18) currently in design. The City owns and operates one low pressure reverse osmosis (RO) water treatment plant (WTP), which has a maximum capacity of 2.0 million gallons per day (mgd). The City is permitted to blend up to 0.50 MGD maximum daily flow RO concentrate water from the WTP to the existing gravity flow line from the City’s wastewater facility for discharge into the Intercoastal Waterway (ICW).

23 Consumptive Use Permit (CUP)

The City's current consumptive use permit (CUP) [#59-5] was issued in October 2016 and expires in 2036. The CUP has an allocation of 0.912 MGD annual average of groundwater from the UFA based on 0.91 MGD water use projection and the population projected to increase to 6,517.

Based on the City's billing records, there are no residents on individual wells and 22 residential septic tanks in the City's service area.



City of Flagler Beach Water Supply Facilities Work Plan

Figure 2- Active Wells

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3. Water Demand and Supply

3.1 Water Treatment Capacity

Water supply to the City of Flagler Beach is derived from a series of Upper Floridian aquifer wells installed outside City limits. The City's firm well production capacity is 333.0 million gallons per year (0.912 mgd annual average). The City's current well capacity is 1,550 gpm or 2.23 MGD as shown in Table 3-1**.** The City has 16 total wells constructed. As of the writing of this report, Wells 10, 12R, 14, and 15 are active. Wells 1-9 and Well 12 have been abandoned. Well 13 is out of service due to serious water drought, with sand and grout plugging the pre-filters. Well 11 is offline for modification. Well 16 is construction but not yet online. Saltwater intrusion and projected growth of the area have driven the need for new wells to meet demand. Additional Wells 17 & 18 are under design.

TABLE 3-1: WELL INVENTORY

Well Number (PWS)	Status	Source	Total Depth (feet)	Casing Depth (feet)	Casing Diameter (inches)	Capacity (GPM)	Use Type
10	Active	FAS-Upper Floridian Aquifer	250	125	8	500	Public Supply
11(1)	Offline	FAS-Upper Floridian Aquifer	250	127	8	500	Public Supply
12R	Active	FAS-Upper Floridian Aquifer	200	110	12	350	Public Supply
13(2)	Offline	FAS-Upper Floridian Aquifer	186	108	12	350	Public Supply
14	Active	FAS-Upper Floridian Aquifer	200	110	12	350	Public Supply
15	Active	FAS-Upper Floridian Aquifer	200	110	12	350	Public Supply
16(3)	Constructed	FAS-Upper Floridian Aquifer	200	110	12	350	Public Supply

(1) Well 11: Offline for modification

(2) Well 13: Offline due to severe water drought

(3) Well 16: Is still not being Monitoring by the EN50.

3.2 Population Projection

3.2.1 Current Flow/Population Served/Per Capita Usage

Table 3-2 exhibit the annual average daily flow and peak month the City of Flagler Beach service water. Data represents water supplied by the City of Flagler Beach and was obtained from monthly records from the City of Flagler Beach.

TABLE 3-2: SERVICED WATER

Year	Annual Average Daily Flow (MGD)	Peak Month (MGD)
2014	0.529	0.556
2015	0.518	0.591
2016	0.598	0.712
2017	0.591	0.654
2018	0.581	0.653
2019	0.579	0.669
2020	0.647	0.750
2021	0.704	0.791
2022	0.606	0.668
2023	0.568	0.611
2024	0.595	0.639

Historically, the population in the City of Flagler Beach utility service area has grown steadily over the past years Development trends for Flagler County area remain strong and population is expected to increase steadily throughout the planning period.

Historical projections are listed in **Table 3-3** and population growth for the new 10 years is projected expecting an annual 2.25% growth. It includes the historical demand and the projected demand through the year 2035. The projections are based on the BEBR historical population with the historical growth change. The City currently has some projects such as residential units approved and/or under construction. Using the number of units and a density of 2.08 persons per unit, results in an additional 3,100 population projected until 2035.

TABLE 3-3: CITY'S HISTORICAL & PROJECTED POPULATION

Year	BEBR Historical Population	Year Change (%)	Population Projection from City Approved Projects	Population Projection from City Approved Projects
2014	4,462			
2015	4,503	0.9%		
2016	4,582	1.8%		
2017	4,625	0.9%		
2018	4,666	0.9%		
2019	4,719	1.1%		
2020	4,700	-0.4%		
2021	5,133	9.2%		
2022	5,182	1.0%		
2023	5,216	0.7%		
2024	5,550	6.4%		
Historical Average		**2.25%**		

2025		2.25%	443	6,118
2026		2.25%	277	6,532
2027		2.25%	1464	8,143
2028		2.25%	94	8,419
2029		2.25%	94	8,702
2030		2.25%		8,898
2031		2.25%		9,098
2032		2.25%		9,302
2033		2.25%		9,511
2034		2.25%		9,724
2035		2.25%	728	10,671

Using the previous data from **Table 3-3** a calculation can be made for the per capita potable water usage in gallons per capita per day (GCD) for the City of Flagler Beach **Table 3-4** for the past 10 years.

TABLE 3-4: HISTORIC PER CAPITA WATER USAGE

Year	Average Daily Flow (MGD)	Service Area Population	Per Capita Consumption (GPCD)
2014	0.5287	4,462	118
2015	0.5184	4,503	115
2016	0.5984	4,582	131
2017	0.5905	4,625	128
2018	0.5813	4,666	125
2019	0.5790	4,719	123
2020	0.6475	4,700	138
2021	0.7045	5,133	137
2022	0.6063	5,182	117
2023	0.5677	5,216	109
2024	0.5953	5,550	107
		10-year average	**122**
		5-year average	**122**

The 10-year historical average flow and the 5-year historical average flow 122 GPCD. The reduction in per capita flow is partially due to higher rates, vacancies and lower occupancy. New construction is expected to raise the consumption from new customers. A per capita flow of 125 GPCD is used for this report refer to **Section 3.3**.

3.3 Level Of Service Standard (LOS) and Water Supply Concurrency

The US Census estimate for people per residential unit is 2.08 and the Flagler Beach Comprehensive Plan includes a water LOS of 125 gallons per capita. The LOS flow for each residential unit is 125 gal/person multiplied by a 2.08 people/unit= 260 gpd/unit.

3.4 Cup Allocation / Supply Projection

Using the projected population and the per capita demand of 125 gallons per capita day, the total water demand anticipated for the City is depicted on **Table 3-5.** The permitted capacity for the wells will exceed due to the growth of population. The City currently uses potable water for irrigation and is planning to transition to reclaim in the future, see **Section 0** for more information on nonpotable water.

TABLE 3-5:PROJECTED AND PERMITTED ANNUAL WITHDRAWALS

Year	Population	[1]Avg. Annual Demand (MGD)	[2]Peak Month Demand (MGD)	Permitted Capacity (MGD)	WTP Facility Capacity (MGD)	Well Capacity (MGD)	Annual Average Daily Raw Water Demand (MGD)
2025	6,118	0.765	0.856	0.912	2	2.23	1.16
2026	6,532	0.816	0.914	0.912	2	2.23	1.24
2027	8,143	1.018	1.140	0.912	2	2.23	1.54
2028	8,419	1.052	1.179	0.912	2	2.23	1.59
2029	8,702	1.088	1.218	0.912	2	2.23	1.65
2030	8,898	1.112	1.246	0.912	2	2.23	1.68
2031	9,098	1.137	1.274	0.912	2	2.23	1.72
2032	9,302	1.163	1.302	0.912	2	2.23	1.76
2033	9,511	1.189	1.332	0.912	2	2.23	1.80
2034	9,724	1.216	1.361	0.912	2	2.23	1.84
2035	10,671	1.334	1.494	0.912	2	2.23	2.02

(1) Population *125 GPCD

(2)1.12 peak flow* AADF

4. Nonpotable Water Supplier Information

The City's currently owns and operates one wastewater treatment plant (WWTP), located three miles east of the WTP, which has a maximum capacity of 1.0 mgd. The WWTP provides advanced secondary treatment and disposes of the effluent into ICW. The City's wastewater service area is identical to the potable water service area, shown in **Figure 4-1**. The City does not currently have reclaimed water production infrastructure at the wastewater treatment facility nor a distribution system network for public access reuse (PAR).

4.1 Reuse Water Practices

4.1.1 Service Area Inventory

The City completed a Reuse Master Plan in September 2024 as a guide for the orderly development and phased implementation of a PAR system for the City of Flagler Beach to ultimately eliminate effluent surface water discharges into the ICW as required by Senate Bill 64. Per the City's Reuse Master Plan, the City's initial reclaimed water service area is planned to serve customers along John Anderson Highway, Roberts Road, and Lambert Avenue/Palm Drive; at the Flager Beach WWTP; and at Wadsworth Park along SR 100. The development and expansion of the PAR system is proposed to occur in five phases over the next six (6) fiscal years. The Reuse Master Plan proposes a PAR system comprised of the following components:

- Reclaimed Water Supply
- Reclaimed Water Storage (at least 2.0 MGD storage volume in short-term)
- High Service Pumping via Reclaimed Water Distribution Pump Station
- Reject Water Storage System (1.0 MG storage volume)
- Reclaimed Water Distribution System Layout
- Controls and Instrumentation Systems

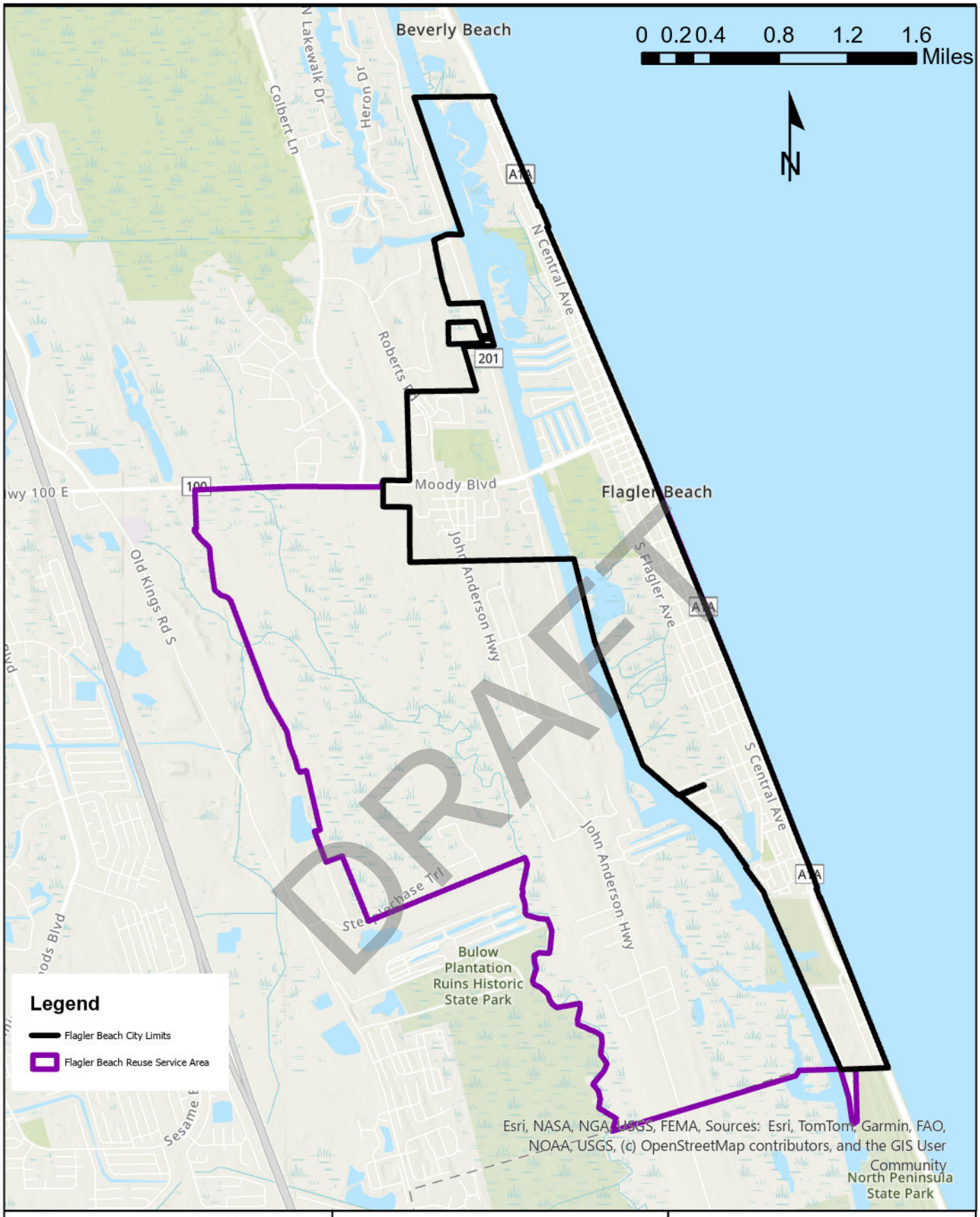
4.1.2 Reuse Demand

Per the Reuse Master Plan, proposed reclaimed PAR demands were compared to wastewater flow projections. With the City's current WWTP treatment and capacity, the City would be able to meet the projected PAR demand until 2032 and 2034 when deficits would occur. The Reuse Master Plan details proposed improvements to the Flagler Beach WWTP that would enable the City to meet the growing demand for wastewater and reuse and avoid deficits. **Table 4-1** shows the projected irrigation demand within the 10-year planning period of this Work Plan.

TABLE 4-1: PROJECTED RECLAIMED WATER DEMAND

Year	Population	Total Potable Water Demand (MGD)	[1]Wastewater Effluent (MGD)	[1]Reclaimed Water Demand (MGD)	[1]Surplus / Deficit (MGD)
2025	6,167	0.771	0.781	0.000	0.781
2026	6,079	0.760	0.793	0.310	0.483
2027	7,717	0.965	0.805	0.310	0.495
2028	6,399	0.800	0.777	0.310	0.467
2029	6,296	0.787	0.747	0.310	0.437
2030	6,341	0.793	0.718	0.549	0.169
2031	6,484	0.810	0.688	0.549	0.139
2032	6,629	0.829	0.658	0.662	-0.004
2033	6,778	0.847	0.669	0.662	0.007
2034	6,930	0.866	0.678	0.679	-0.001
2035	7,814	0.977	0.686	0.679	0.007

(1) City of Flagler Beach Reuse Master Plan



City of Flagler Beach Water Supply Facilities Work Plan

Figure 3- Reclaimed Water Service Area

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5. Water Supply and Facility Capacity Projects – Alternative and Traditional; Potable and Nonpotable

The latest NFRWSP (2023) did not identify any project options related to the City of Flagler Beach. Currently, the City utilizes its interconnects as an alternative water source only in the event of an emergency. Additionally, the City has embarked on a swale/retention program to help retain stormwater to recharge the groundwater aquifer. **Section 8** details specific projects the City has planned to occur during this WSFWP's planning period.

In June 2023, the City proceeded with the new design for upgrades to the City's existing WWTP. To produce reclaimed water, the facility needs to be upgraded to add filtration, pumping, and storage facilities for advanced water treatment (AWT). The scope of work includes new design of the WWTP-AWT Plant Expansion, with funding provided by an FDEP grant. These upgrades are the first phase of a future plan to provide a reclaimed water distribution system to future developments. Expansion of the City's wastewater facilities in conjunction with the development of a comprehensive PAR system will allow the City to offset its potable water demand as the City experiences projected growth.

6. Water Source Protection Practices

The City's wellfield is located outside of the City's municipal limit, in unincorporated Flagler County. Therefore, the City coordinates with Flagler County relative to water source protection. In order to protect the City's sources of water the City does not allow house construction within 1,000 feet of a well. The City's comprehensive plan includes water source protection for quality and quantity of water as well as aquifer recharge protection. A summary of source protection policies is below.

- Land use restrictions to protect water quality (Policies E.1.1.1, E.1.1.2)
- Restrictions in septic tanks (Policy E.1.1.4, D.2.1)
- Intergovernmental coordination for wellfield protection (Policy E.1.2.5)

7. Water Conservation

The City has implemented a variety of water conservation practices. For example, the City implements a water conservation rate structure. In addition, the City is implementing its Water Conservation Plan that was submitted as part of the CUP process. The City's comprehensive plan also includes some other water conservation practices. A summary of these policies is below. The City plans to maintain these practices and improve upon them when feasible.

- Monitoring water consumption trends (Policy D.1.4.1)
- Conduct public education efforts informing and encouraging responsible water use (Policy D.1.6.1)
- Implementation of City's Water Conservation Plan and associated practices (Policy D.1.6.2)
- Enforce FBC requirements for max flow rates in new developments (Policy D.1.6.3)
- Investigate potential use of gray-water for certain onsite irrigation systems (Policy D.1.6.4)
- Metering Requirements (Policy D.1.6.5)
- Requirements for native plants (Policies E.2.5.3 and E.2.6.3)
- Intergovernmental coordination of water conservation (Policies G.1.4.4-G.1.4.7)

8. Capital Improvements

The latest NFRWSP (2018) did not identify any project options related to the City of Flagler Beach. In 2017, the City completed construction of Well #12R as a replacement for Well #12 per the recommendations of the previous NFRWSP. The City plans on further expanding the wellfield capacity from 2.0 MGD to 5.0 MGD (10 wells), as well as expanding the water treatment plant capacity to provide potable water to future developments. The City also plans to build a 1.0 MGD tank on plant grounds to have sufficient storage on the mainland, as well as run a 16-inch water main down Lambert Avenue for a second river crossing in the future.

Appendix A details the capital improvements the City has scheduled to occur from FY2026 to FY2030 to meet growing demand within the WSFWP's ten-year planning period.

APPENDIX A

CITY OF FLAGLER BEACH
CAPITAL IMPROVEMENT PROGRAM (CIP)