DORAL
FLORIDA

DORAL 2050 COMPREHENSIVE PLAN UPDATE

DATA, INVENTORY AND ANALYSIS
VOLUME No. 2

CORRADINO

DORAL
FLORIDA

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DATA INVENTORY AND ANALYSIS

INTRODUCTION

The Resiliency element of this Comprehensive Plan serves as a tool to help the city's residents and communities better withstand the shocks and stressors posed by climate risks, environmental concerns, and to support long-term sustainability. The Resiliency element supports the city's land use, transportation, infrastructure, housing, and capital planning frameworks. As cities in South Florida face increasing impacts from flooding, extreme heat, and aging infrastructure, traditional planning methods alone are no longer adequate to protect public safety, economic stability, equitable conditions, and natural resources. Incorporating this element provides a coordinated framework for integrating nature-based solutions, green infrastructure, and equitable investment strategies into future growth and redevelopment. The goal is to ensure that public policies proactively enhance community resilience and provide effective mitigation for extreme events, rather than respond reactively to environmental hazards.

CLIMATE VULNERABILITY

Extreme Heat

Like other South Florida cities, Doral has experienced an increase in the number and frequency of extreme weather events. Extreme heat has become an increasing hazard to public health and natural ecosystems. According to NOAA, South Florida climate data indicate that the frequency of extreme heat days has increased noticeably over recent decades. For example, in Miami-Dade County, NOAA data shows that in 1960, there were an average of 85 days per year with temperatures over 90 degrees Fahrenheit, but by 2022, that had increased to around 133 days per year. This is an increase of approximately 56%, with no analytical evidence suggesting that this trend will reverse.

Policies and programs that support tree canopy coverage, green infrastructure, reflective-colored structures, and other heat-reducing measures should be implemented during the planning period to reduce this climatic threat.

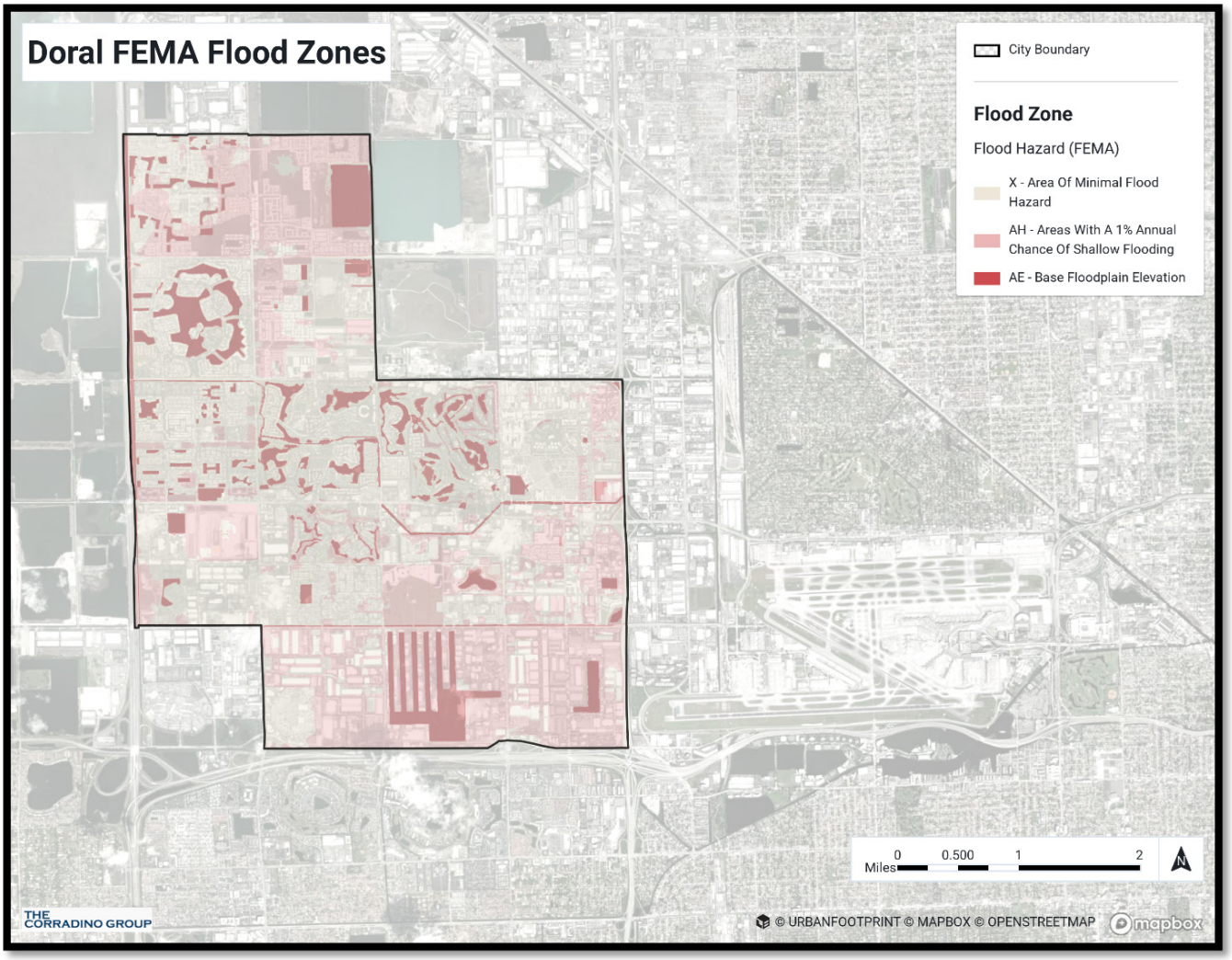
Extreme Rainfall Events

The number of extreme rainfall events has also steadily increased, with NOAA reporting a 12% increase in heavy rainfall events in Miami-Dade County between 1970 and 2024. Two-day rainfall events with over 1.2 inches are where most precipitation occurs. Although extreme rainfall events are expected to increase in the planning period, overall precipitation is expected to decrease. In data obtained from ClimateCheck, in 1990, about 41% of precipitation occurred during these two-day downpours; In 2050, this number is projected to decrease to about 40%. In addition, overall precipitation in the city is expected to fall from 58 inches annually to approximately 56.2 inches annually. See the Conservation element data and analysis for information on water conservation measures.

Flooding

The City of Doral is considered to be at significant risk from flooding. Based on the 2024 FEMA flood zone maps, Doral has a high-to-severe flood risk. Data obtained from ClimateCheck saw that in all 58 documented census tracts in Doral, all of them showed that more than 50% of all structures in the city had a significant risk of storm surge, tidal flooding, surface flooding, and riverine flooding. The FEMA flood zones are shown in **Map 1** below.

MAP 1: FEMA FLOOD ZONES (2024) IN DORAL, FL



As shown in **Map 1**, the city of Doral does not include every FEMA-designated flood zone. The three FEMA flood zones present within the City are Zones X, AH, and AE. Zone X represents areas of no to minimal flood risk and is located outside the mapped 0.2% annual chance floodplain. This is commonly referred to as the 500-year floodplain. Zone AH is a high-risk Special Flood Hazard Area (SFHA) with a 1% annual chance in the 100-year floodplain model of flooding and is characterized by shallow ponding, typically with flood depths between 1 and 3 feet, for which Base Flood Elevations (BFEs) are established. Zone AE is also a high-risk SFHA within the 1% annual chance floodplain, where detailed hydraulic analyses have been conducted, and Base Flood Elevations are established to guide development and floodplain management standards.

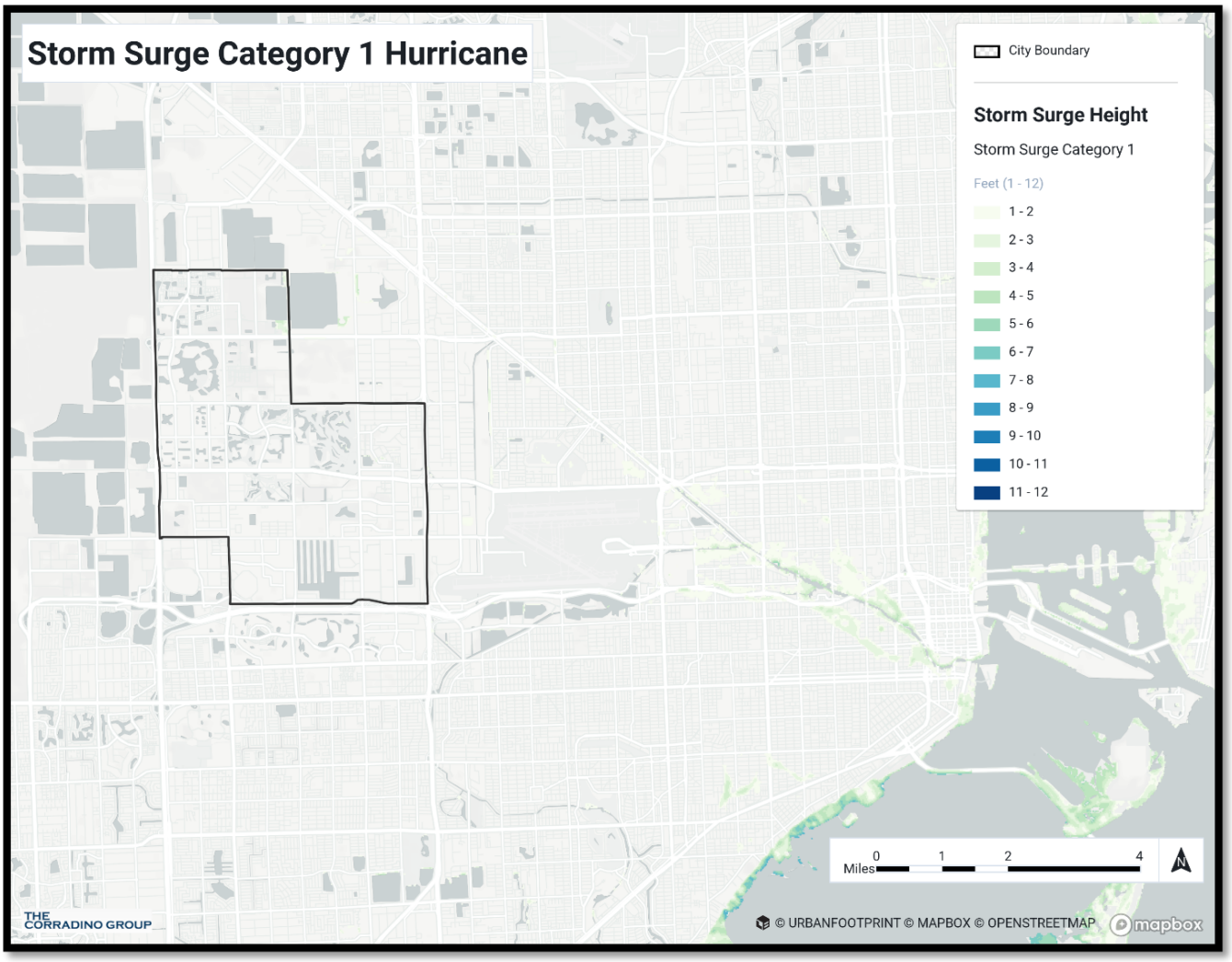
The city should maintain and expand stormwater management practices and mitigation efforts throughout the planning period to lessen the impact of flooding. Flooding often affects poor communities hardest. To alleviate this issue, all measures to prevent, mitigate, and divert the damage caused by flooding should be implemented in an equitable manner.

Hurricanes

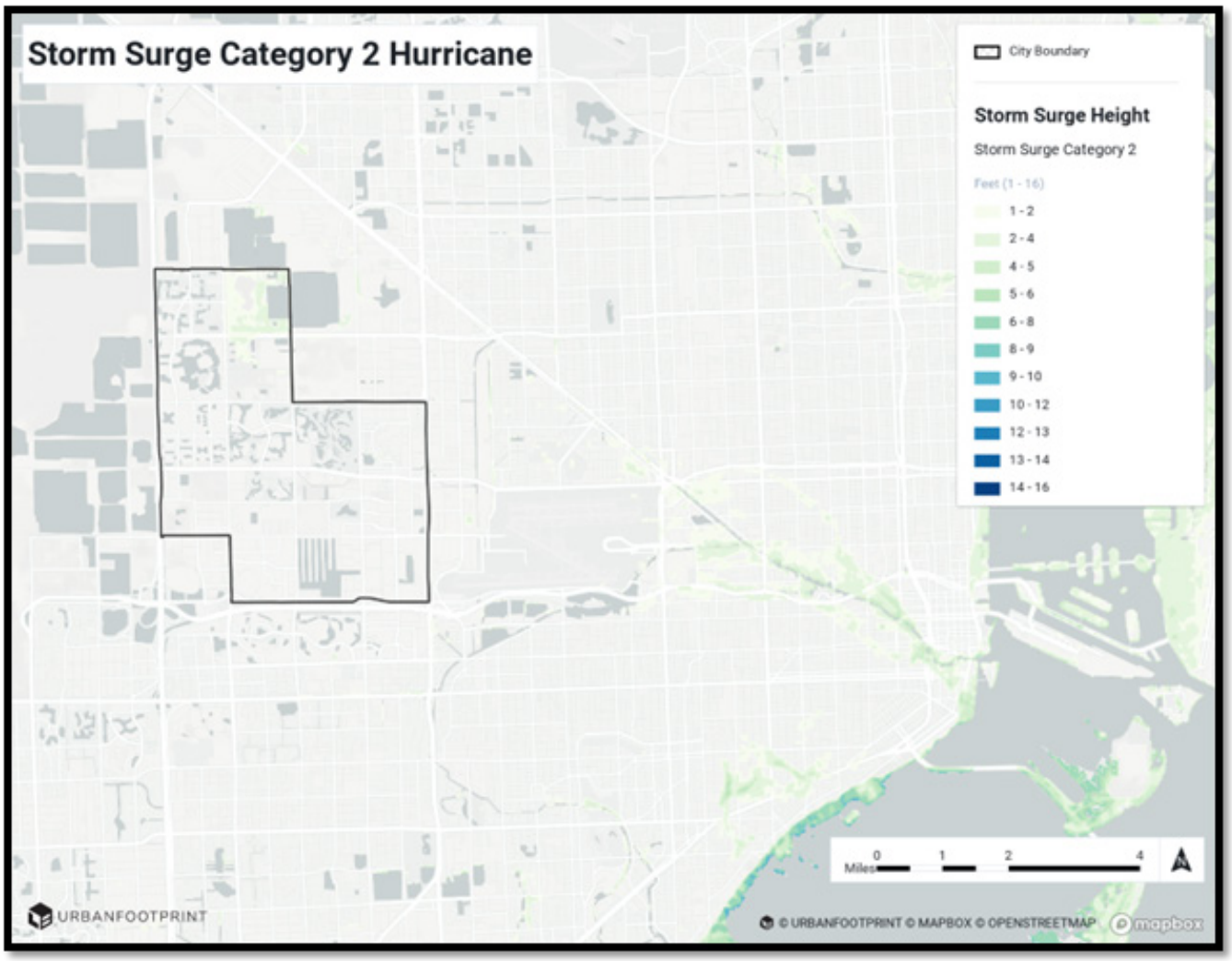
Doral is positioned inland from the coast, and so, it is rare for a hurricane to make a direct city landfall, but regional storms bring high winds, precipitation, and storm surge that have been devastating to the community. Although largely spared from the violent hurricanes that caused widespread devastation in the 2020s, Miami-Dade County still has one of the highest hurricane strike probabilities in the United States. The Counties Local Mitigation Strategy (2025) noted that approximately 70 of the over 340 hurricanes in the last century have impacted Miami-Dade County, and the county has a 1-in-6 chance of being hit by a hurricane in any given year.

The following maps depict the predicted storm surge for each hurricane category scenario in the region.

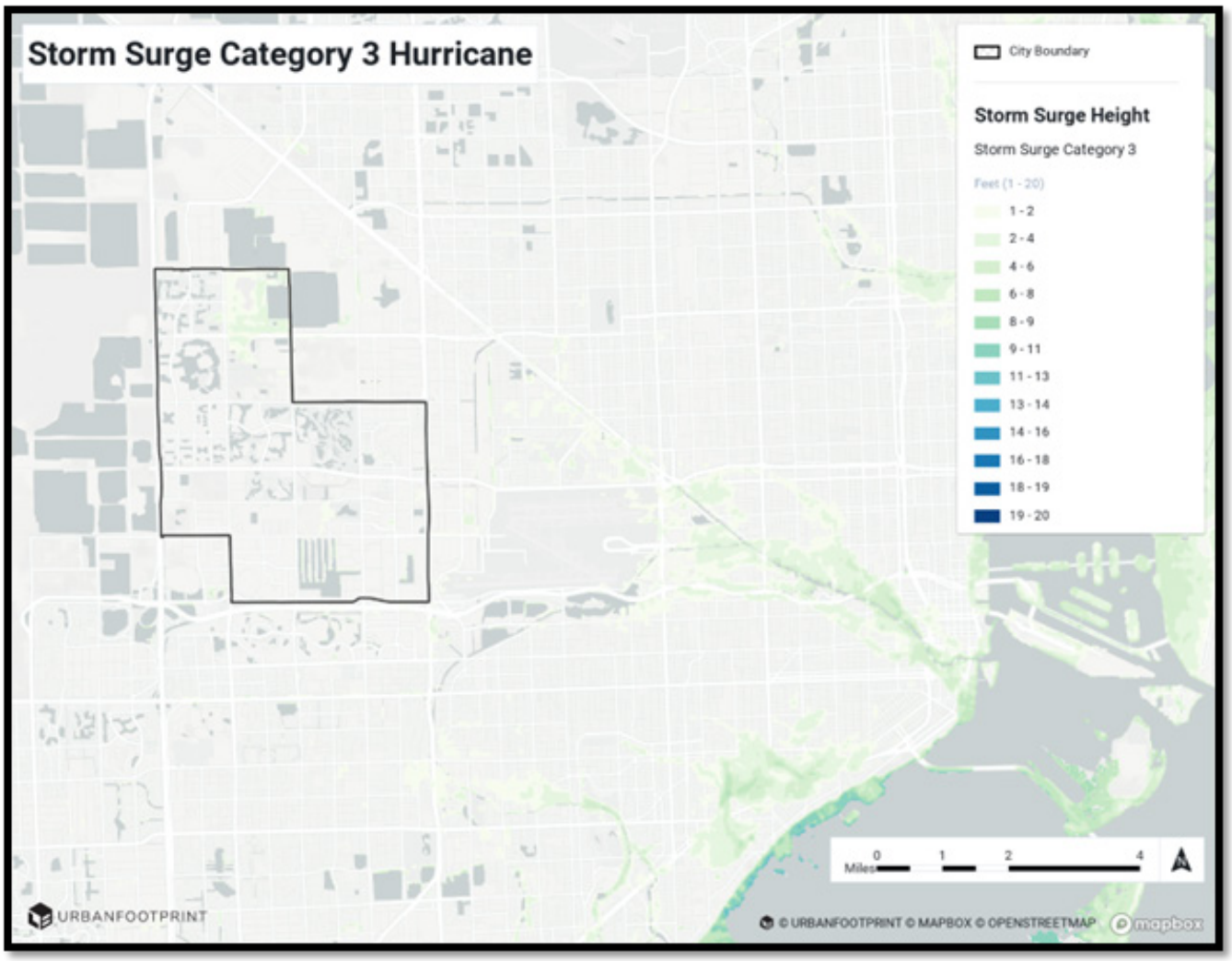
MAP 2: CATEGORY 1 STORM SURGE SCENARIO (NOAA)



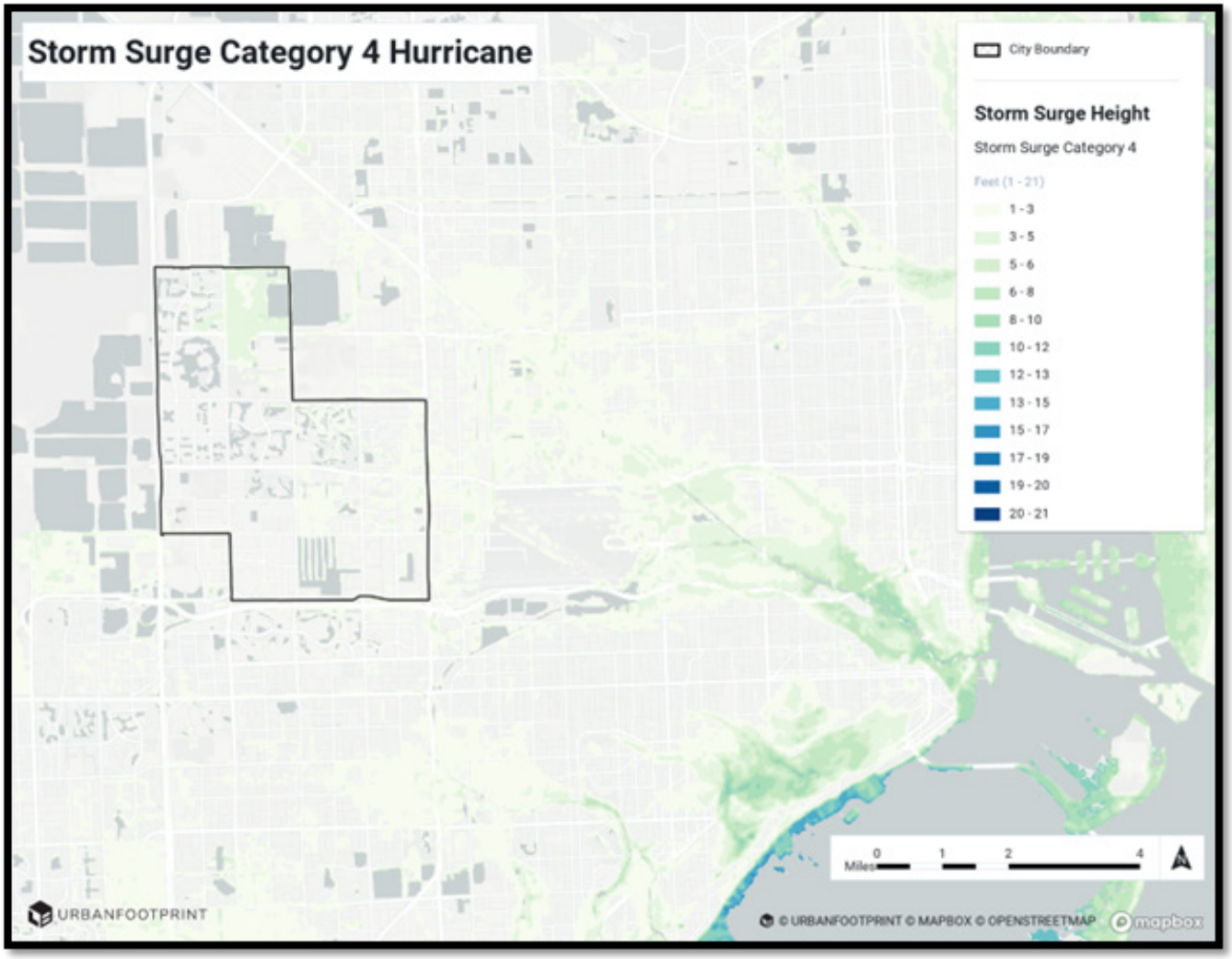
MAP 3: CATEGORY 2 STORM SURGE SCENARIO (NOAA)



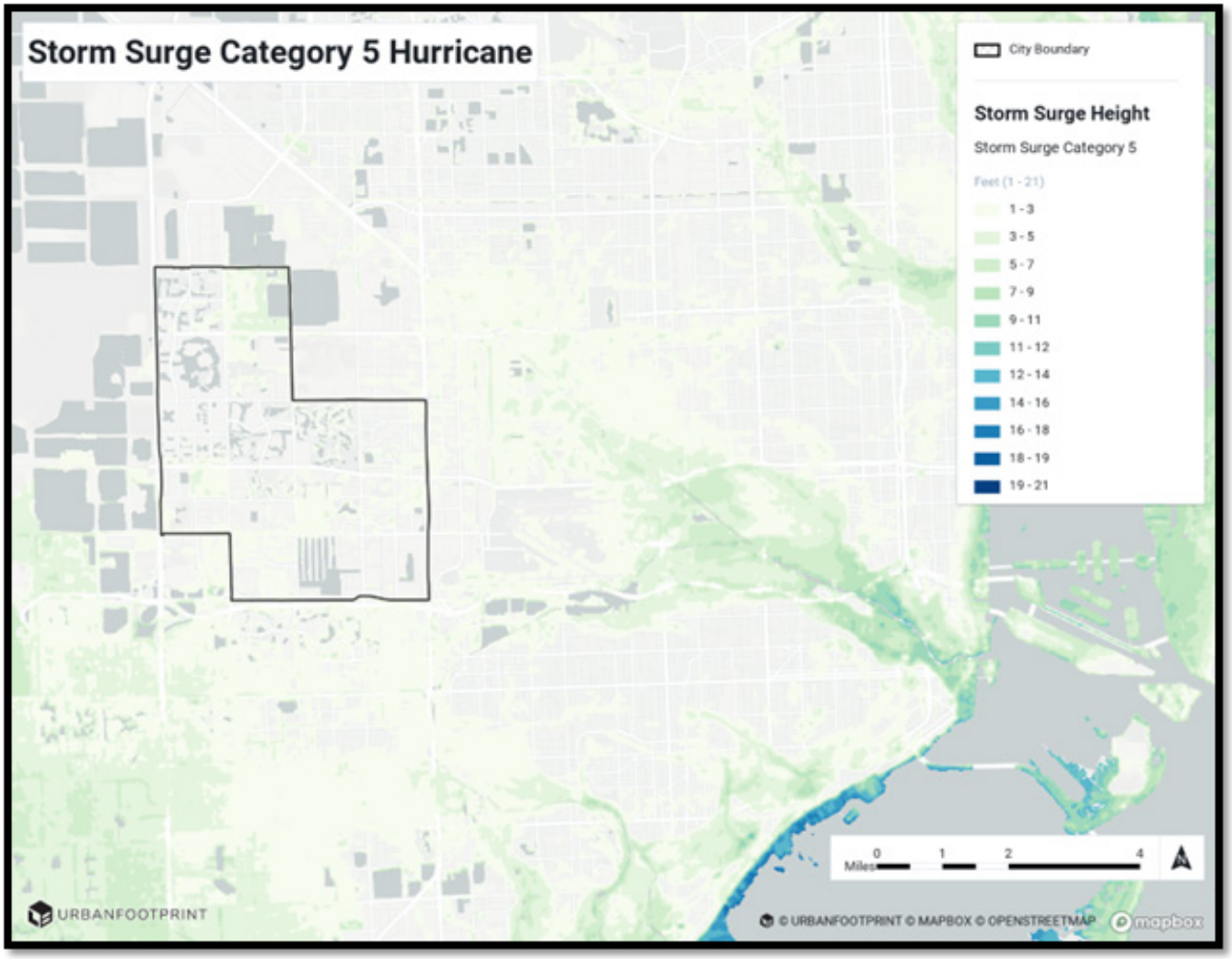
MAP 4: CATEGORY 3 STORM SURGE SCENARIO (NOAA)



MAP 5: CATEGORY 4 STORM SURGE SCENARIO (NOAA)



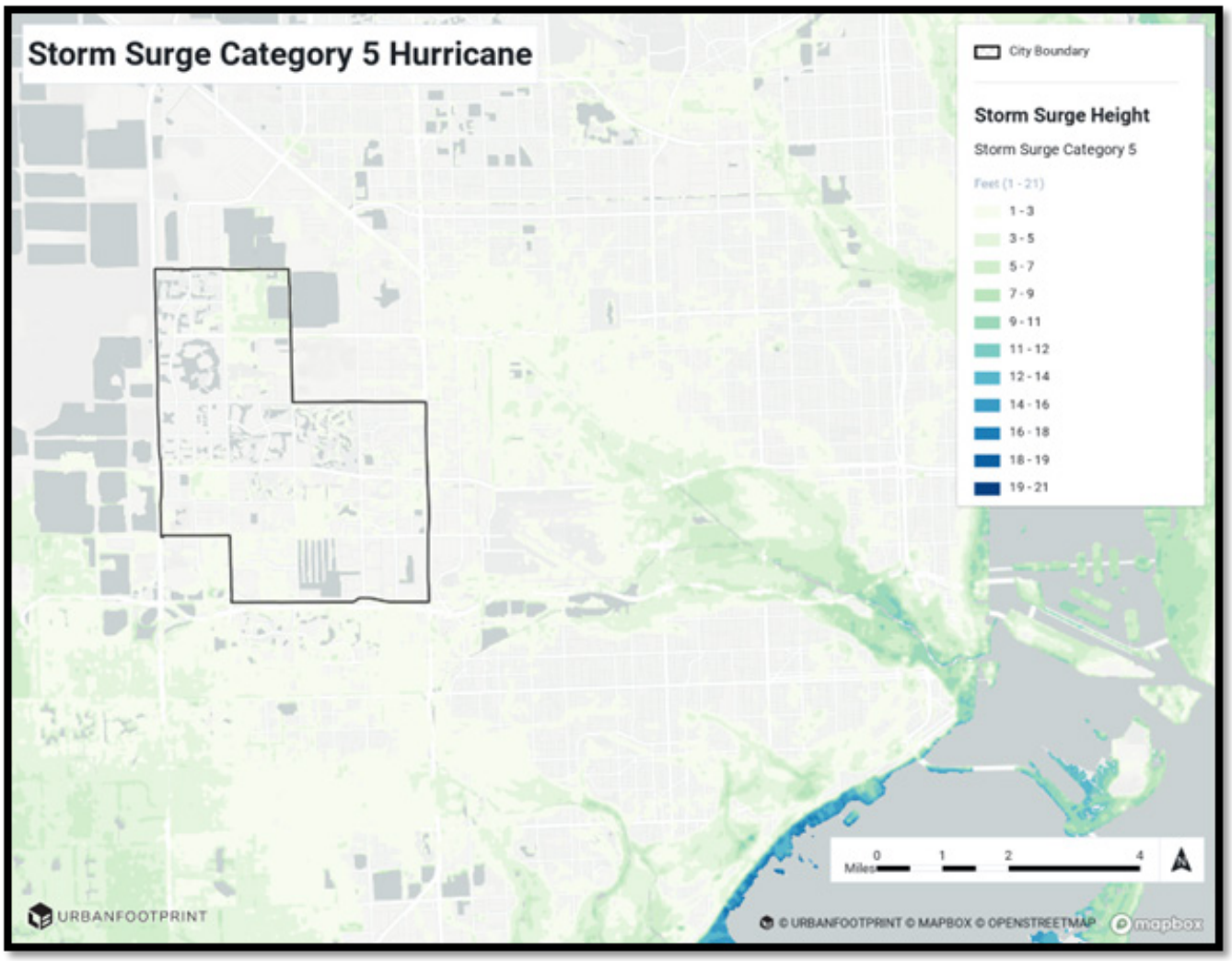
MAP 6: CATEGORY 5 STORM SURGE SCENARIO (NOAA)



As shown in **Maps 2-6**, storm surge from hurricanes is not projected to cause as extreme flooding in Doral as it does in coastal cities. During a Category 1 hurricane, no effect from storm surge will affect the city. In a Category 2 hurricane, flooding from storm surge alone will occur in the northeast of the city, largely the area between NW 58 Street and NW 74 Street. In a Category 3 hurricane, storm surge remains in the northeast of the city but begins to move southward. In a Category 4 hurricane, the northeast, northcentral, and parts of the central and eastern city would be impacted by storm surge. In a Category 5 hurricane, Large sections of the city will be affected. However, in all scenarios, storm surge never exceeds 3-5 feet.

Storm surge is not the only factor in determining hurricane risk. In recent years, the size and intensity of hurricanes have continually increased. High winds and rainfall affect broader areas, and Doral will aim to support policies and programs that enhance the resilience of the city's institutions, facilities, and emergency response capabilities in the face of these increasing storms.

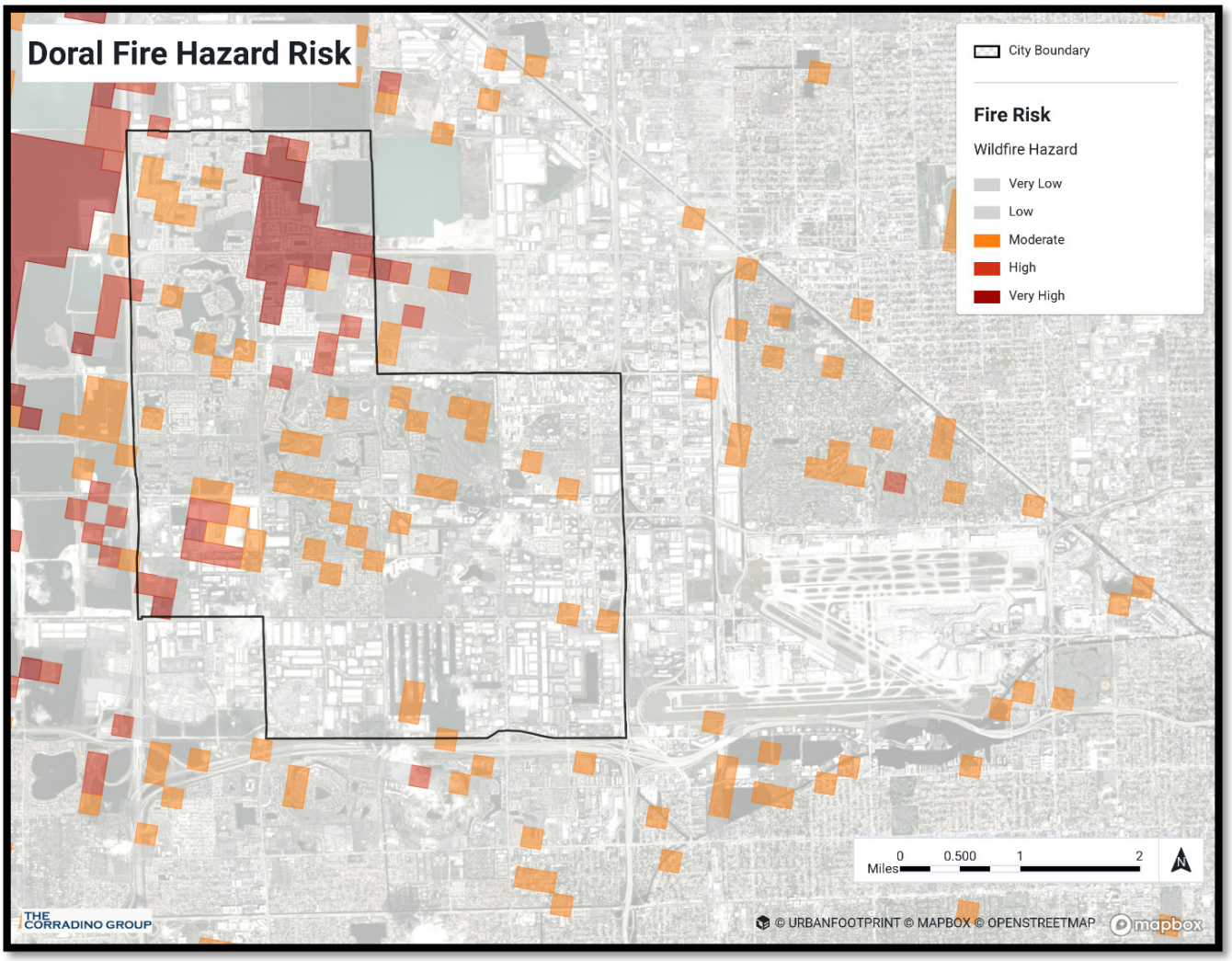
MAP 6: CATEGORY 5 STORM SURGE SCENARIO (NOAA)



Drought & Wildfires

Wildfires have become an increasing hazard to communities in South Florida. The number of days in drought conditions has been increasing in South Florida, as extreme heat events increase evaporation and alter rainfall patterns. The number of drought periods is expected to increase by 2050. According to data obtained by ClimateCheck, of the last 58 census tracts in Doral, 44 determined that at least 25% of structures in the city had a significant fire risk, and 36 had over 50% of structures with a significant risk. Policies that support drought-tolerant vegetation and xeriscaping may help reduce this risk by creating conditions less susceptible to catching fire during dry periods. The wildfire risk areas are depicted in **Map 7.**

MAP 7: WILDFIRE RISK IN DORAL, FL



ENVIRONMENTAL CONCERNS

Brownfields

The purpose of the Brownfield Program is to support environmental rehabilitation, job creation, and promote economic redevelopment in "Environmentally Challenge Areas" with perceived or actual contamination. There are a number of brownfield sites within Doral. These consist of waste disposal sites, energy production, petrol, and other industrial activities. The largest number of these sites is located within the northeast section of the city, adjacent to the WM Medley Landfill and the 58th Street Landfill.

Florida Brownfield Program

Florida's Brownfield Redevelopment Act provides the public and private sectors with an array of regulatory and financial benefits to facilitate the environmental cleanup and reuse of properties with environmental challenges.

- Most incentives are available pursuant to adoption by a local government of a Resolution that complies with the applicable procedural and substantive criteria.

- Incentives are only available to parties who enter into a Brownfield Site Remediation Agreement (BSRA) with the environmental regulatory agency responsible for administering the Florida Brownfields Redevelopment Program.

In the proposed brownfield area, property owners with environmental challenges will be able to recoup a portion of the environmental cleanup cost and, potentially, a portion of their redevelopment costs by entering into a Brownfield Rehabilitation Agreement (BSRA) with Miami-Dade County under the Brownfield Program.

- With a BSRA the property owner will be eligible to receive Voluntary Cleanup Tax Credits (VCTC), in the amount of 75% to 100% of all costs incurred to assess and remediate the Subject Property in the form of Florida corporate income tax credits.

- The execution of a BSRA would also trigger an important liability incentive, which protects the property owners and their lenders from claims for environmental cost recovery, property damage, and injunctive relief arising out of contamination conditions at the subject property.

To receive this designation, a brownfield area is analyzed by the following criteria:

- The area warrants economic development and has a reasonable potential for such activities; and

- Whether the proposed area to be designated represents a reasonably focused approach and is not overly large in geographic coverage; and

- Whether the area has the potential to interest the private sector in participating in rehabilitation; and

- Whether the area contains sites or parts of sites suitable for limited recreational open space, cultural, or historical preservation purposes.

NW 58th Street Corridor Green Reuse "Brownfield" Area

The City of Doral currently monitors the land use and development of the area adjacent to the NW 58 Street Landfill. The area includes two active sites. Most notable is the 7777 NW 41st Street Green Reuse Site, which has an active rehabilitation agreement, and the Doral 87 Brownfield Site. The area is depicted in **Figure 1**. The following lists the brownfields' existing status.

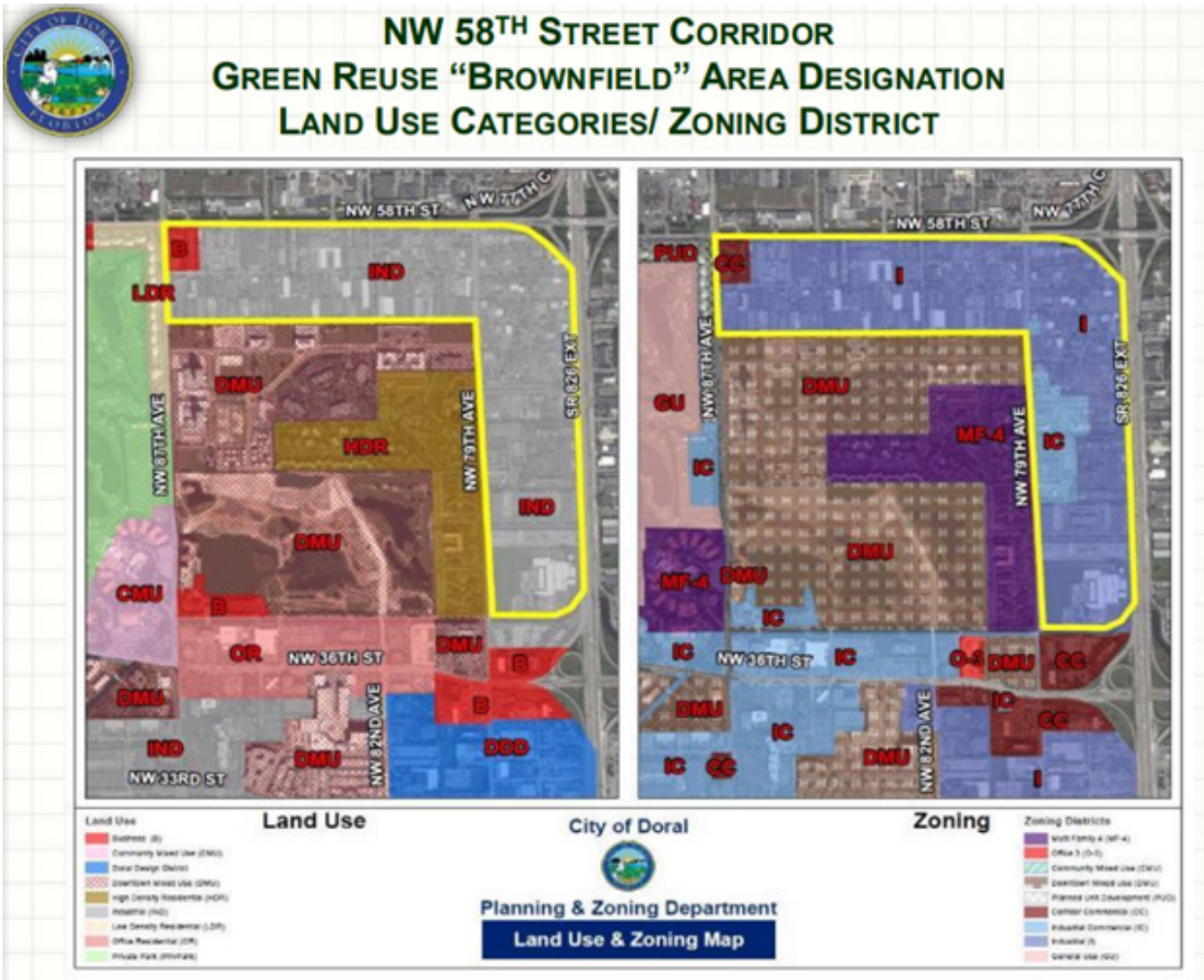
- **Area Current Condition -** Industrial/Office/Commercial and holds the brownfield areas designation ID BF131701000.

- **Property Size -** Approximately 260 acres of land with over 220 light industrial and commercial properties.

- **Unique Features of the Area -** Located within close proximity to major regional highways, Miami International Airport, Metro-Rail station, residential uses, and Downtown Doral.

- **Potential Redevelopment -** The City anticipates that the buildout of Downtown Doral and several other mixed-use redevelopment projects under construction along Doral Boulevard (NW 36th Street), and potential redevelopment of the Pepsi property, will be a catalyst to initiate the redevelopment of this area in the future, consistent with the development pattern already in place in downtown Doral and surrounding areas.

FIGURE 1: NW 58TH STREET CORRIDOR GREEN REUSE BROWNFIELD AREA DESIGNATION



Other Contaminated Sites

In addition to the NW 58th Street brownfield area, the Florida Department of Environmental Protection's database lists other brownfields in Doral. The full list of brownfields in Doral is listed in **Table 1.**

TABLE 1: BROWNFIELD AREAS AND SITES WITHIN DORAL, FL

Brownfield Area/Site Name	Area ID	Site ID	Status
NW 58th Street Corridor Green Reuse Area	BF131701000	-	Designated Brownfield that contains two active sites.
Doral 87 Brownfield Site (Part of NW 58th Street Corridor)	BF131701000	BF131701002	Seeking a BSRA site rehabilitation order.
7777 NW 41st Street Green Reuse Site (Part of NW 58th Street Corridor)	BF131701000	BF131701001	Has an active BSRA rehabilitation completion order issued in 2023,
Doral Décor District Brownfield Area	BF131104000	-	Designated brownfield area that contains three active sites.
Jackson West Hospital Brownfield Site	BF131104000	BF131104002	Seeking a BSRA site rehabilitation order.
Skilled Nursing Facility Brownfield Site	BF131104000	BF131104003	Actively undergoing remediation and redevelopment.
Hawthorne Suites Doral Décor District BF Site	BF131104000	BF131104001	BSRA was revoked in 2020. No active remediation is occurring.

ECONOMIC RESILIENCE

Adaptive Reuse

In May 2019, the City of Doral created an Adaptive Reuse Study Area Action Plan. Due to the growth of the Doral population, several major residential and mixed-use projects came before the City for approval, including the Downtown Doral project. The evolution of Downtown Doral into a dynamic city center with restaurants, retail, and residential was driving interest in development and redevelopment of surrounding areas, such as the commercial and industrial area directly to the north, which was the focus of this Adaptive Reuse Study Area Action Plan. Additionally, both the Study Area and Doral as a whole are approaching full build-out. The Study Area is 11% vacant (13 acres), and the city is 5% vacant (450 acres), based on 2018 Florida Department of Revenue data. The limited land for new development further underscores the focus on redevelopment, particularly for structures in the Study Area that are generally older than those in the City at large. The percentage of square footage built in the Study Area peaked at over 50% in the 1970s, while the city hit its peak at just over 30% in the 1990s. The Plan provides recommendations for the adaptive reuse and redevelopment of the Study Area. An adaptive reuse plan can be highly relevant when creating a Resiliency Element for a City's Comprehensive Plan.

1. Environmental Sustainability

- Reduces Demolition Waste: Adaptive reuse minimizes construction and demolition debris, a significant source of landfill material.
- Preserves Embodied Energy: Reusing existing structures retains the energy and resources already invested in building materials and construction.

2. Reduced Resource Consumption

- Less need for new materials and infrastructure means fewer emissions from extraction, processing, and transportation.

- Encourages sustainable building practices by promoting materials efficiency.

3. Smart Growth and Land Use

- Adaptive reuse often focuses on underutilized or abandoned buildings in already-developed areas (e.g., downtowns, industrial zones).
- This supports infill development, reduces sprawl, and aligns with compact, walkable community goals — key in most green elements.

4. Transportation and Emissions

- Many reuse projects occur in areas with existing transit infrastructure, helping reduce car dependency.
- Contributes to lower greenhouse gas emissions from both construction and travel.

5. Cultural and Historic Preservation

- Incorporates environmental goals with preservation of local heritage, a form of cultural sustainability.
- Maintains neighborhood character while modernizing energy efficiency and environmental performance.

6. Economic and Social Equity

- Can stimulate revitalization without displacing communities if implemented thoughtfully.
- Often creates opportunities for affordable housing, small businesses, or community spaces in sustainable ways.

FIGURE 1: SOURCE: ADAPTIVE REUSE STUDY AREA ACTION PLAN, MAY 2019

Please refer to the Doral Adaptive Reuse Master Plan for further Data, Inventory, and Analysis for the Resiliency Element of the Doral Comprehensive Plan.

DORAL GREEN MASTER PLAN

The February 11, 2008, City of Doral Green Master Plan was the impetus for the Resiliency Element within the Comprehensive Plan. The following incorporates the plan by providing data and analysis aspects of the plan.

Urban Tree Canopy & Vegetation

The City of Doral completed a 2020 Street Tree Planting Master Plan to guide strategic canopy expansion throughout public rights-of-way. The plan identifies vacant planting locations, evaluates site constraints, including utilities, sidewalk width, and soil conditions. The Plan recommends appropriate plant species based on urban tolerance, shade potential, and long-term maintenance considerations. The Master Plan establishes a structured approach to increasing canopy coverage, reducing urban heat island effects, improving pedestrian comfort, and enhancing neighborhood aesthetics. By prioritizing feasible planting corridors and resilient species, the City is positioned to incrementally expand its urban forest in alignment with infrastructure capacity and climate adaptation goals.

In addition to future planting strategy, the City maintains a tree inventory framework to document existing tree species, overall health condition, size class, and canopy coverage. This inventory allows the City to monitor canopy trends over time, identify maintenance or replacement needs, and evaluate equity in shade distribution across neighborhoods and commercial areas. Tracking these metrics supports decision-making, informs capital improvement programming, and provides measurable benchmarks for canopy expansion targets within the Resiliency element.

Please see the 2020 Street Tree Planting Master Plan.

Parks & Recreation Infrastructure

The City of Doral maintains a comprehensive inventory of its parks and recreation systems, including major community assets such as Doral Central Park, Downtown Doral Park, and Doral Glades Park. The park inventory documents acreage, geographic distribution, and available amenities such as playgrounds, athletic fields, sports courts, walking and biking trails, aquatic facilities, event lawns, and cultural or community centers. This cataloging effort ensures that the City can evaluate service levels, identify gaps in access, and align park improvements with neighborhood growth patterns and adopted level-of-service standards.

In addition to physical infrastructure, the City tracks facility usage data, program participation rates, and attendance at community events to assess demand across its recreational system. Monitoring trends in athletic leagues, fitness classes, cultural programming, and special events provides insight into changing community needs and seasonal usage patterns. This approach supports capital planning, informs programming adjustments, and ensures that future park investments are responsive to population growth, demographic shifts, and evolving recreational preferences. Please see the Parks and Open Space element for more data and analysis for parks and recreation infrastructure.

Stormwater Management

The City of Doral maintains a comprehensive inventory of its stormwater management infrastructure, including catch basins, gravity drainage systems, exfiltration trenches, canals, pump stations, outfalls, and green infrastructure elements such as bioswales and retention areas. This inventory provides a baseline understanding of system capacity, age, condition, and geographic distribution across the City. The framework builds upon the City's adopted 2009 Stormwater Management Master Plan, which evaluated watershed characteristics, basin performance, and capital improvement priorities. Additional technical details and system mapping are provided in the Infrastructure Element for reference and cross-consistency.

Performance metrics are used to evaluate how effectively the existing system manages runoff, mitigates localized flooding, and responds to increasingly intense rainfall events. These metrics include drainage-level-of-service

standards, pump-station capacity, storage volume, outfall elevations, and observed ponding duration following major storm events. Ongoing assessment of system performance supports targeted capital investments, the integration of green infrastructure strategies, and alignment with broader resiliency goals to address sea-level rise, groundwater elevation, and trends in extreme precipitation.

Sustainable Mobility & Trails

The City of Doral maintains a comprehensive inventory of its trail and greenway network to evaluate system connectivity, condition, and accessibility. This inventory documents shared-use paths, neighborhood connectors, sidewalk corridors, on-street bicycle facilities, and regional trail linkages, identifying how well these facilities connect residential areas, schools, parks, employment centers, and transit stops. Mapping existing infrastructure allows the City to assess network gaps, safety concerns, and maintenance needs while supporting long-term mobility planning and capital improvement programming.

In addition to mapping physical infrastructure, the City collects and evaluates mobility data, including pedestrian counts, bicycle usage patterns, and corridor-level activity trends. This information helps identify high-demand routes, underserved areas, and opportunities for enhanced connectivity or safety improvements. By integrating usage data with land use, park access, and transit planning, the City can prioritize trail expansions, multimodal enhancements, and complete streets initiatives that advance sustainability and provide more equitable conditions that support a resilient populace. Integrating these elements into the Resiliency Element of the DIA will provide a comprehensive foundation for sustainable urban planning in Doral, aligning with the city's green initiatives and enhancing the quality of life for its residents.

Guiding Green Principles

In addition to the main elements of the Green Master Plan, the overall principles tied to the plan encourage the following:

- Reduce vehicle travel miles
- Strengthen landscape and open space standards
- Create strong energy efficiency standards
- Incentivize alternative urban energy sources
- Interconnect the City's places
- Conserve water
- Reuse and recycle
- Bring back community agriculture
- Strive to be a "carbon-neutral" City government
- Initiate education and outreach

Please refer to the Doral Green Master Plan for further Data, Inventory, and Analysis for the Resiliency Element of the Doral Comprehensive Plan.

DATA INVENTORY AND ANALYSIS

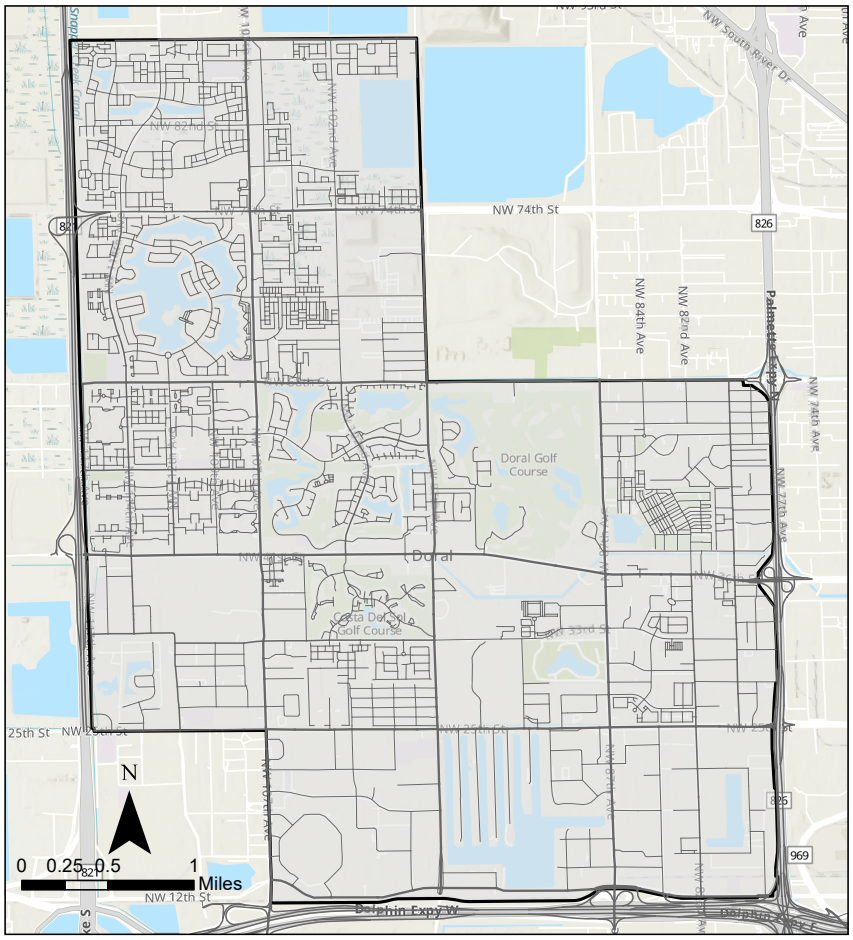
INTRODUCTION

The Future Land Use for the City of Doral represents the City's vision for development and redevelopment up to 2050 for 5, 10, 15, 20, and 25-year planning periods. This component of the City's Future Land Use Element (FLUE) is designed to provide the data and analysis showing current and projected population, existing and future land use conditions, residential capacity, and opportunities to improve the living environment of the City of Doral. It also forms the basis for the development of City's future land use goals, objectives and policies, to prudently and strategically guide the future growth of Doral. Because of this, the Future Land Use Element, more than any other comprehensive plan element, provides the direction and guidance to carry the community to its ultimate vision. All other plan elements and sub-elements are dependent upon the land development pattern shown on the Future Land Use Map. This element is a vital guidepost to ensure that the community envisioned is sustained and will flourish into the premiere City expected by current and future residents, businesses and community leaders. The City is governed by a Mayor and a five-member Council administered by the City Manager.

EXHIBIT 1-1: CITY OF DORAL LOCATION MAP

City of Doral Comprehensive Plan

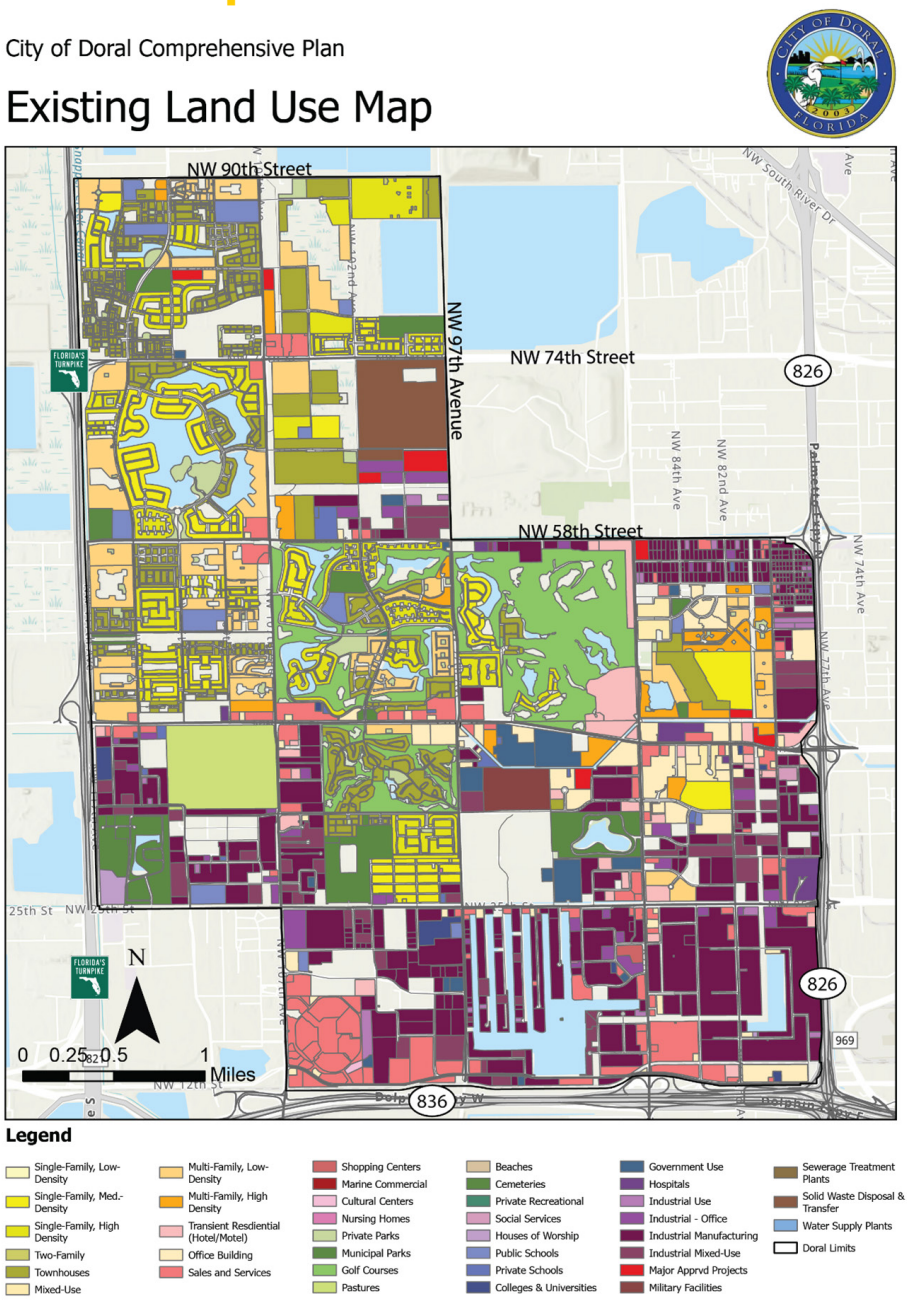
Doral City Limits



EXISTING LAND USE CONDITIONS

The City of Doral is a diverse municipality with a mix of uses. In order to develop a Future Land Use Element a municipality must review future land use patterns, by taking an inventory of its current land use. Using this inventory, the Existing Land Use Map (Map 1-1) was created detailing the current land uses present in the City. Also shown on this map are vacant land, and the existing lakes and other water bodies within the Doral. Table 1-1 documents existing land uses in the City by category and acreage.

MAP 1-1: EXISTING LAND USE MAP



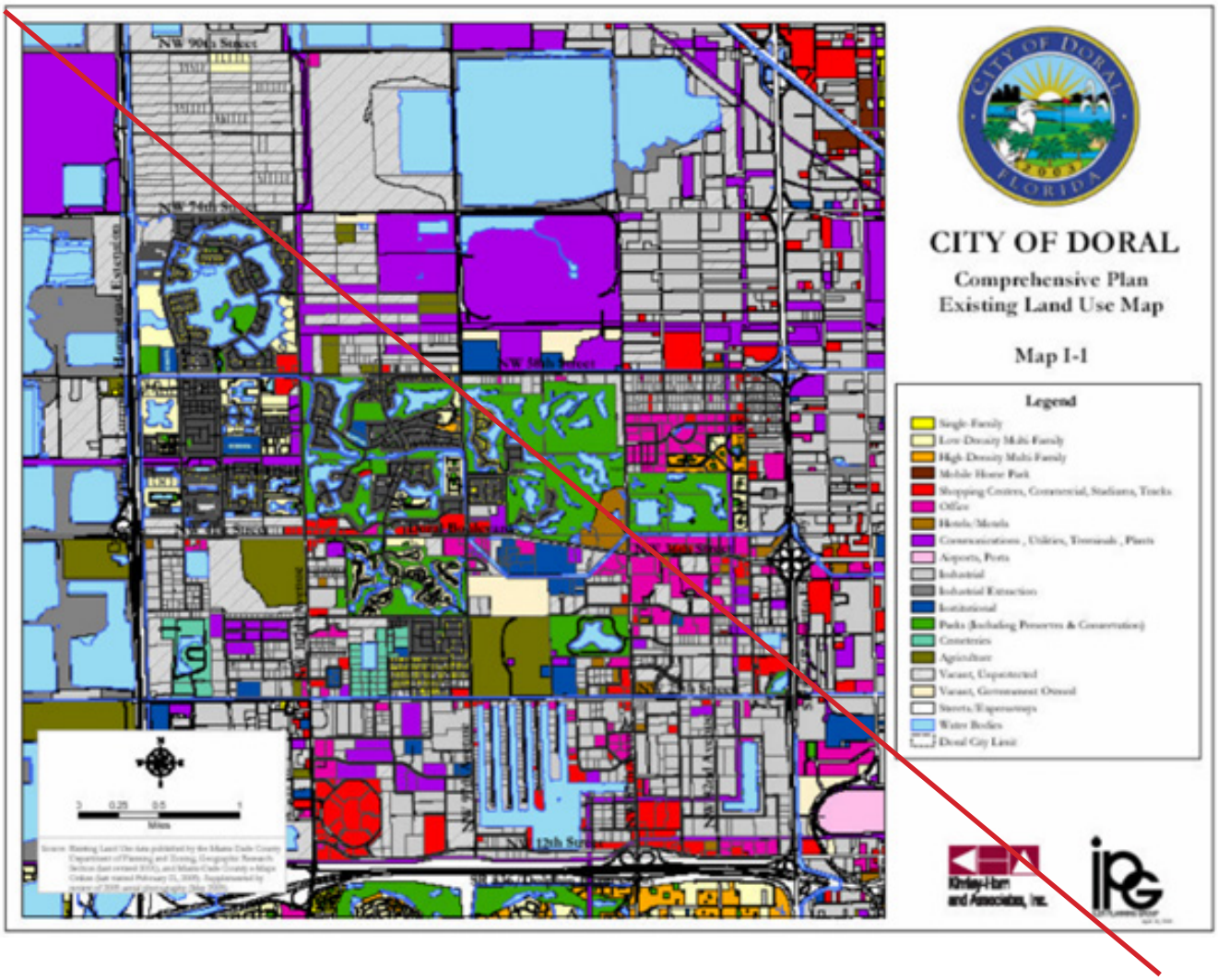

CITY OF DORAL
Comprehensive Plan
Existing Land Use Map
Map I-1
Legend
Single Family
Low Density Multi Family
High Density Multi Family
Mobile Home Park
Shopping Centers, Commercial, Stadiums, Tracks
Office
Hotels/Motels
Communications , Utilities, Terminals , Plants
Airports, Ports
Industrial
Industrial Extraction
Institutional
Parks (Including Preserves & Conservation)
Cemeteries
Agriculture
Vacant, Unprotected
Vacant, Government Owned
Streets/Expressways
Water Bodies
Doral City Limit
NW 90th Street
NW 74th Street
NW 58th Street
NW 12th Street
Miles

TABLE 1-1: EXISTING LAND USE TABLE

RESIDENTIAL LAND USES		
Land Use	**Acreage**	**Percent**
Single-Family, Low-Density (Under 2 DU/Gross Acre).	1	0.01%
Single-Family, Med.-Density (2-5 DU/Gross Acre).	354	3.70%
Office Building.	242	2.53%
Single-Family, High Density (Over 5 DU/Gross Acre, other than Townhouses, Duplexes and Mobile Homes).	467	4.88%
Townhouses.	663	6.93%
Two-Family (Duplexes).	2	0.02%
Residential predominantly (condominium/ rental apartments with lower floors Office and/or Retail. High density > 15 dwelling units per ac, multi-story buildings (Generally more than 5 stories).	35	0.37%
Multi-Family, Low-Density (Under 25 DU/Gross Acre).	466	4.87%
Multi-Family, High Density (Over 25 DU/Gross Acre).	136	1.42%
Industrial intensive, Commercial Condominium type of use	242	2.53%
Sub-Total	**2608**	**27.25%**

OTHER LAND USES		
Land Use	**Acreage**	**Percent**
Beaches.	0.01	0.00%
Bus/Truck/Freight Forwarding Terminals.	137	1.43%
Canal right-of-way.	2	0.02%
Cemeteries.	158	1.65%
Colleges and Universities, Including Research Centers, Public and Private.	31	0.32%
Communications (Radio, TV, Cable, and Phone), excluding Antenna Arrays.	26	0.27%
Cultural (auditoriums, convention centers, exhibition centers, museums, art galleries, libraries).	3	0.03%
Electric Power (Generator and Substation, and Service Yards).	6	0.06%
Extraction, Excavation, Quarrying, Rock-Mining, excluding the resulting water body (see 917).	0	0.00%
Golf courses, Public and Private.	538	5.62%
Governmental/Public Administration (Other than Military or Penal).	114	1.19%
Highways and Expressways right-of-way and associated open and landscaped areas excluding paved expressways and ramps.	17	0.18%
Hospitals, clinics, medical offices and/or dental facilities	46	0.48%
Houses of Worship and Religious, and associated uses (parking, retreat houses, residencies, childcare, etc.).	17	0.17%
Industrial Extensive	38	0.39%
Industrial Intensive, heavy-light manufacturing, and warehousing-storage type of use	1311	13.70%
Industrial Intensive, Office type of use	117	1.22%

OTHER LAND USES		
Land Use	**Acreage**	**Percent**
Inland water bodies (Lakes, Ponds, and Watercourses) associated with industrial areas, industrial parks and new industrial development.	244	2.55%
Inland water bodies (Lakes, Watercourses) associated with residential developments.	409	4.27%
Major Approved Projects.	54	0.57%
Major Transmission Lines.	170	1.78%
Military Facilities.	54	0.57%
Municipal Operated Parks	137	1.43%
Nursing homes, Assisted living facilities, and Adult congregate living quarters	1	0.01%
Other inland water bodies (Lakes, Ponds, Watercourses other than rivers and canals), including road borrow pits.	230	2.40%
Parking- Public and Private Garages and Lots.	5	0.06%
Pasture (Grazing, Animal Farming, Dairy Farms and Animal Feed Lots), excluding Horse and Poultry.	176	1.84%
Paved Highways, Expressways and Ramps.	5	0.05%
Private Drives.	198	2.07%
Private Recreational Facilities Associated with private Residential Developments, except marinas/ yacht basins, includes landscape and open spaces associated to residential, commercial and office developments.	90	0.94%
Private Schools, Including Playgrounds (K-12, Vocational Ed., Day Care and Child Nurseries).	28	0.30%
Public Schools, Including Playgrounds (K-12, Vocational Ed., Day Care and Child Nurseries).	107	1.12%
Railroads- Terminals, Trackage, and Yards.	35	0.37%
Rivers and Canals.(Water)	98	1.03%
Road Maintenance and Storage Yards, and Motor Pools.	3	0.03%
Sales and Services (Wholesale facilities, Spot commercial, strip commercial, neighborhood shopping centers/plazas). Excludes office facilities.	462	4.82%
Shopping Centers (Regional and Community).	7	0.07%
Social Services, and Charitable institutions (Shrines, Elks, Moose, Lions Club).	5	0.05%
Solid Waste Disposal and Transfer (Includes Dumps, Solid Waste Land Fills, Resource Recovery Plants and Facilities, Trash Transfer Stations).	152	1.59%
Street right-of-way and entrance features both public and private, and utility easements.	34	0.35%
Streets and Roads, except Expressways and Private Drives.	1055	11.02%
Transient-Residential (Hotel-Motel)	149	1.56%
Vacant Government owned or controlled.	164	1.72%
Vacant, Non-Protected, Privately-Owned.	210	2.19%
Vacant, Protected, Privately-Owned. Proposed and designated EEL sites until acquired, or protected under any other conservation or environmental mechanism.	121	1.26%
Sub-Total	**6966**	**72.77%**
Total	**9574**	**100.00%**

TABLE 1-1: EXISTING LAND USE TABLE

LAND USE	ACRES	PERCENT
Residential		
Single-Family (up to 6 D.U./acre)	492.04	4.97%
Low-Density Multi-Family (7 to 25 D.U./acre)	447.57	4.52%
High-Density Multi-Family (greater than 25 D.U./acre)	38.3	0.39%
Sub-Total	977.91	9.88%
Other		
Shopping Centers Commercial Stadiums Tracks	385.92	3.90%
Office	401.62	4.06%
Transient-Residential (Hotels/Motels)	87.26	0.88%
Communications Utilities Terminals Plants	648.32	6.55%
Industrial	1459.87	14.75%
Industrial Extraction	127.34	1.29%
Institutional	165.19	1.67%
Parks (Including Preserves & Conservation)	918.61	9.28%
Agriculture	300.64	3.04%
Cemeteries	125.53	1.27%
Vacant Unprotected	1861.15	18.80%
Vacant Government Owned	84.81	0.86%
Streets*	1430.1	14.45%
Water*	923.71	9.33%
Sub-Total	8920.09	90.12%
Total	**9898**	**100.00%**

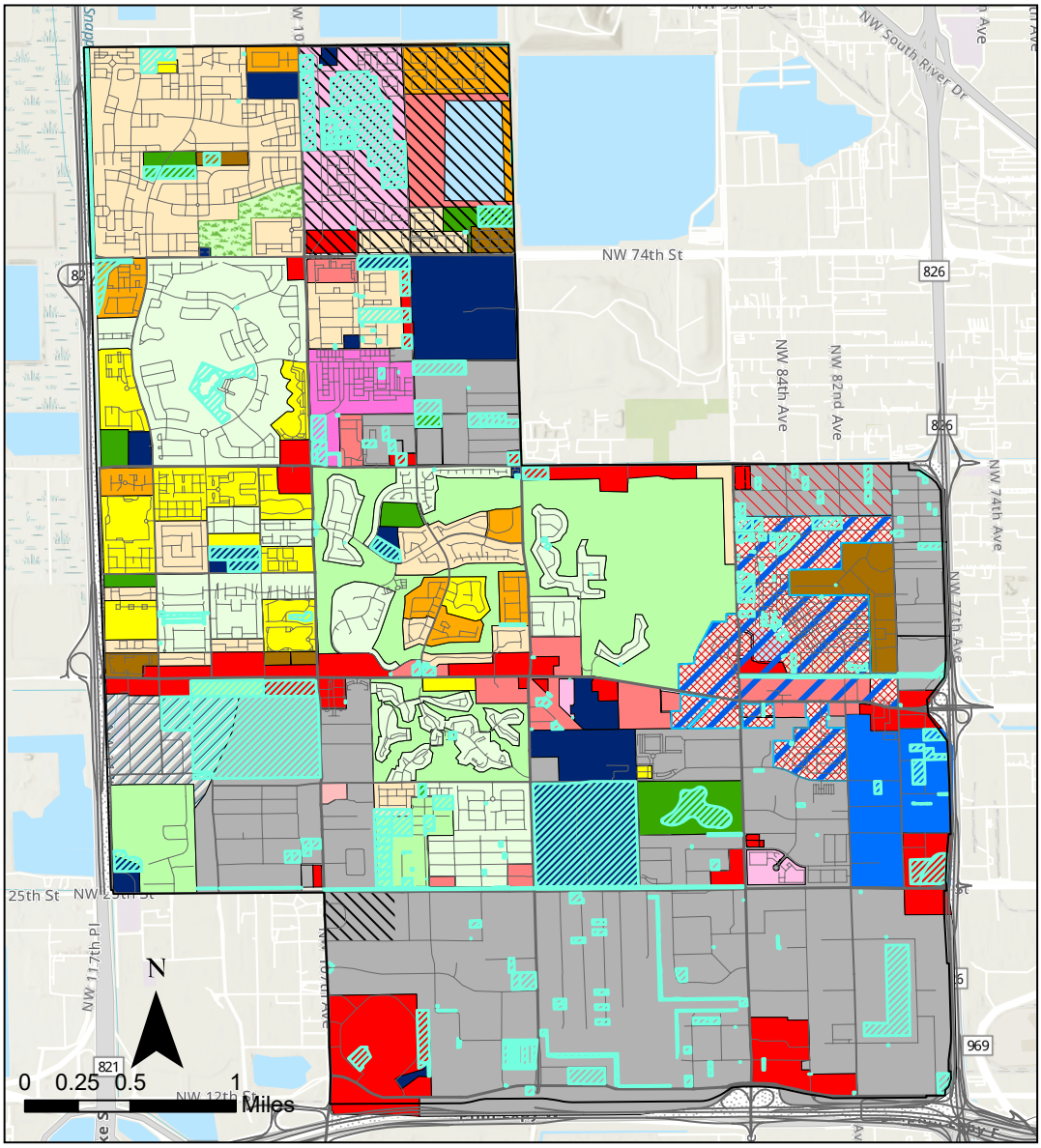
**Not a land use category*
Source: Kimley-Horn and Associates Miami-Dade County Existing Land Use Map GIS File aerial photography (2004)
Prepared: May 23 2005

The location of the City's vacant lands by future land use is shown on Map I-2. In addition, Table 1-2 provides an acreage breakdown of the vacant land pattern shown on the map. There are an estimated 1020.5 acres of vacant or undeveloped ~~1,946 acres of vacant or undeveloped land~~ within the City of Doral, which comprises approximately 11% ~~19.72%~~ of the total land mass. Residential land totals 6% ~~46.5%~~ of the City's vacant land inventory with 61 ~~607~~ acres of that being in the Low-Density category. Industrial areas comprise 44% ~~16.76%~~, while Traditional Neighborhood land uses make up an estimated 1.04% ~~14.72%~~ of available vacant property. The vacant Institutional and Public Facility lands in the City total 191 ~~121~~ acres or 18.7% ~~6.25%~~ of the total unbuilt area, owing largely to the large federal land parcels in the center of the City which are not developed. The City has an estimated 53.73 acres (5.27%) ~~106 acres (5.43 %)~~ of private undeveloped Business tracts currently.

MAP 1-2: VACANT LAND USE MAP

City of Doral Comprehensive Plan

Future Land Use with Vacant Land



Legend

Land Use
- Adaptive Reuse Area
- Business (B)
- Urban Central Business District
- Regional Activity Center
- Community Mixed Use (CMU)
- Doral Décor District
- Downtown Mixed Use (DMU)
- Environmentally Protected Parks (EPP)
- Estate Density Residential (EDR)
- Expressway Right of Way (EXPY)
- High Density Residential (HDR)
- Industrial (IND)
- Institutional and Public Facility (INST)
- Low Density Residential (LDR)
- Medium Density Residential (MDR)
- Moderate Density Residential (MoDR)
- Office (O)
- Office Residential (OR)
- Private Park (PrivPark)
- Public Park (PubPark)
- Restricted Industrial (RIO)
- Traditional Neighborhood Development (TND)
- Doral Limits
- Vacant Land

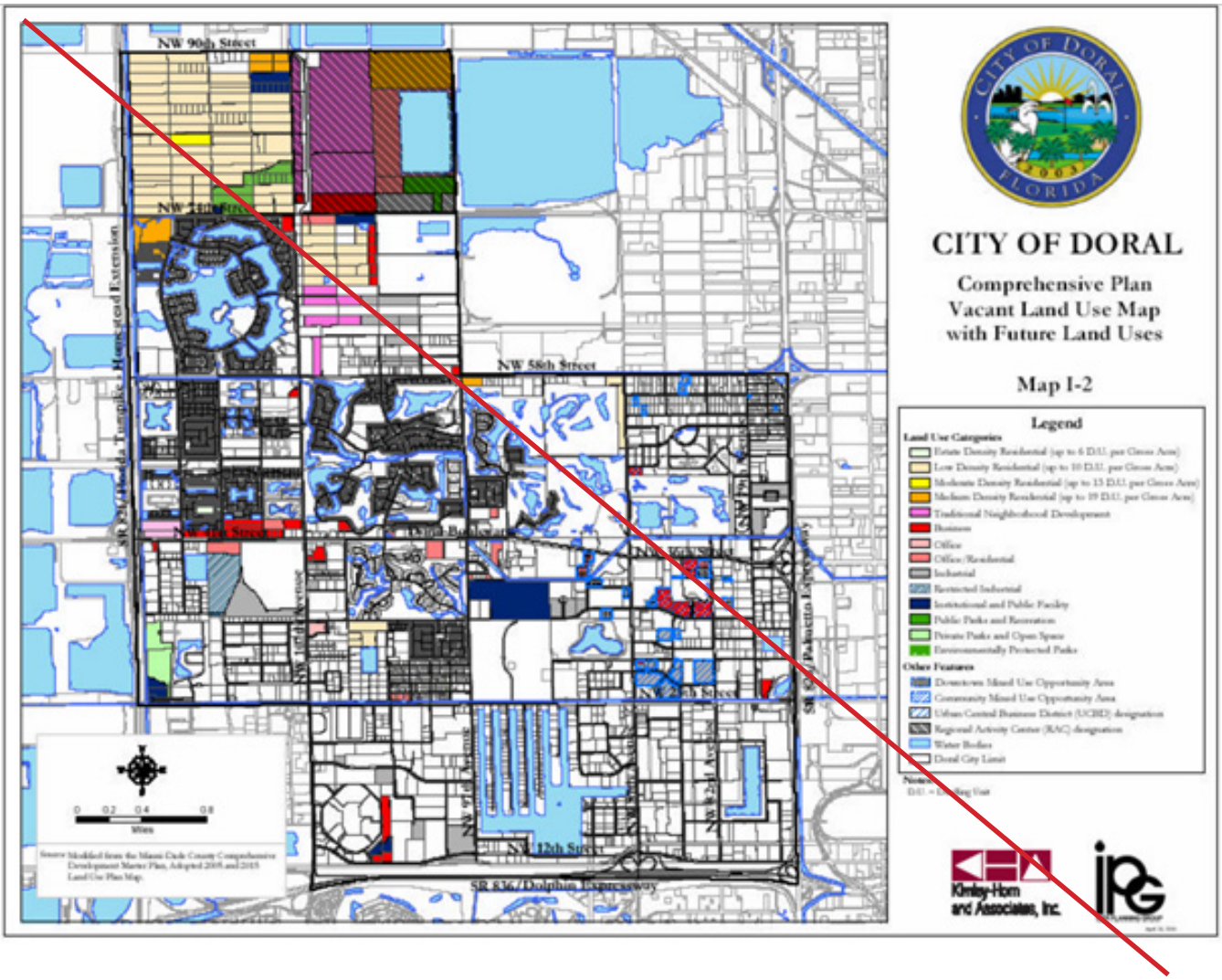

NW 90th Street
NW 58th Street
NW 12th Street
SR 836/Dolphin Expressway
SR 826/Florida Turnpike - Homestead Extension
SR 826/Palmetto Expressway
NW 107th Avenue
NW 97th Avenue
NW 87th Avenue
NW 82nd Avenue
NW 79th Avenue
NW 72nd Avenue
0 0.2 0.4 0.8
Miles
CITY OF DORAL
Comprehensive Plan
Vacant Land Use Map
with Future Land Uses
Map I-2
Legend
Land Use Categories
Estate Density Residential (up to 6 D.U. per Gross Acre)
Low Density Residential (up to 10 D.U. per Gross Acre)
Moderate Density Residential (up to 13 D.U. per Gross Acre)
Medium Density Residential (up to 19 D.U. per Gross Acre)
Traditional Neighborhood Development
Business
Office
Office/Residential
Industrial
Restricted Industrial
Institutional and Public Facility
Public Parks and Recreation
Private Parks and Open Space
Environmentally Protected Parks
Other Features
Downtown Mixed Use Opportunity Area
Community Mixed Use Opportunity Area
Urban Central Business District (UCBD) designation
Regional Activity Center (RAC) designation
Water Bodies
Doral City Limit
Kimley-Horn and Associates, Inc.

TABLE 1-2: VACANT LAND USE TABLE

Residential		
Land Use	**Acres**	**Percent**
Estate Density Residential	21.18	2.08%
Low Density Residential	27.12	2.66%
Office Residential	8.36	0.82%
Traditional Neighborhood Development	10.63	1.04%
Medium Density Residential	8.61	0.84%
Moderate Density Residential	1.75	0.17%
High Density Residential	2.65	0.26%
Community Mixed Use	95.94	9.40%
Downtown Mixed Use	28.89	2.83%
Doral Décor District	12.12	1.19%
Sub-Total	**217.25**	**21.0%**

Other		
Land Use	**Acres**	**Percent**
Public Parks and Recreation	45.50	4.46%
Private Parks and Open Space	49.18	4.82%
Business	53.73	5.27%
Industrial	290.85	28.50%
Restricted Industrial	162.64	15.94%
Institutional and Public Facility	190.88	18.70%
Expressway Right of Way	10.47	1.03%
Sub-Total	**803.25**	**79%**
Grand Total	**1020.50**	**100%**

TABLE 1-2: VACANT WITH FUTURE LAND PROFILE

Land Use	Acres	Percent
Estate Density Residential (0 to 6 D.U. per Gross Acre)	30.20	1.55%
Low Density Residential (6 to 10 D.U. per Gross Acre)	637.97	32.78%
Moderate Density Residential (10 to 13 D.U. per Gross Acre)	15.22	0.78%
Medium Density Residential (13 to 19 D.U. per Gross Acre)	143.26	7.36%
Downtown Mixed Use	31.08	1.60%
Community Mixed Use	16.31	0.84%
Traditional Neighborhood Development	286.59	14.73%
Business and Office	100.64	5.17%
Office	5.02	0.26%
Office/Residential	134.24	6.90%
Industrial and Office	279.67	14.37%
Restricted Industrial and Office	41.03	2.11%
Institutional and Public Facility	114.02	5.86%
Public Parks and Recreation	27.43	1.41%
Private Parks and Open Space	31.26	1.61%
Environmentally Protected Parks	52.00	2.67%
Total	**1,945.95**	**100.00%**

Last modified 08/10/05

POPULATION HISTORY TRENDS AND PROJECTIONS

The comprehensive plan must be based on well-documented population estimates and projections. Table 1-3 represents the population estimates for the City of Doral

TABLE 1-3 POPULATION PROJECTIONS FOR CITY OF DORAL

YEAR	POPULATION
2000	21,000
2004	30,285
2005	33,633
2010	46,266
2015	59,323
2020	72,659

Sources U.S Census University of Florida BEBR Iler Planning Group (methodology) May 2005

Residential

Single family residential uses occupy 822 acres (8.6%) ~~2,130.8 acres (33%) 2241.7 acres (34.2%)~~ of the City's land area. The City is currently characterized by Industrial Uses. Single-family homes currently take up the most acreage by residential land use category.

Townhouse communities also comprise a significant portion of the City's residential land area, with 663 acres (6.9%). Duplexes make up 2 acres (0.02%) of the City's land Area. Low Density multi-family apartments comprise of 466 acres (4.87%). High density multi-family apartments, comprise only 136 acres (1.42%).

Commercial and Office

Commercial land uses cover approximately 711 acres of the land or about 7.42% of the City. Commercial uses are primarily retail and include wholesale trade, office, and services, and automobile services. In the next few years, high demand for is projected to decrease the number of retail vacancies in the region, and commercial real estate will continue to be a pillar of the local economy. Doral has several mixed-use designations throughout the city that have made commercial developments more common and this trend is projected to continue as the city pushes forward with its goal of more urban centers.

Industrial

Industrial land uses currently cover 1708 acres of the land or about 17.85% of the City. These uses are concentrated near the northern border of the City. ~~These industrial areas will be in the coming years as interconnections to nearby neighborhoods and to the mixed-use designated areas may prompt a change in the surrounding built environment.~~

Parks

The City of Doral is well known for its golf courses and has substantial private and public recreational facilities. Combined with vacant, open, and natural spaces, there are over 629 acres devoted to parks and recreation. Many private clubhouses, tennis courts, and other facilities exist within communities that provide recreational opportunities for residents. These semi-private and private recreational facilities encompass 91 acres. This is coupled with the over 538 acres of public recreation facilities in the city.

Based on the vacant land analysis presented previously and the population projections presented above, it has been shown that the City of Doral has sufficient vacant residential land currently to allow growth through the year 2019. Given the mixed-use redevelopment opportunities created by the proposed City FLUM, it is expected that the future residential capacity of the City will actually be extended well beyond 2019 as controlled development proceeds.

TABLE 1-2: VACANT WITH FUTURE LAND PROFILE

Land Use	Acres	Percent
Estate Density Residential (0 to 6 D.U. per Gross Acre)	30.20	1.55%
Low Density Residential (6 to 10 D.U. per Gross Acre)	637.97	32.78%
Moderate Density Residential (10 to 13 D.U. per Gross Acre)	15.22	0.78%
Medium Density Residential (13 to 19 D.U. per Gross Acre)	143.26	7.36%
Downtown Mixed Use	31.08	1.60%
Community Mixed Use	16.31	0.84%
Traditional Neighborhood Development	286.59	14.73%
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Office	5.02	0.26%
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Industrial and Office	279.67	14.37%
Restricted Industrial and Office	41.03	2.11%
Institutional and Public Facility	114.02	5.86%
Public Parks and Recreation	27.43	1.41%
Private Parks and Open Space	31.26	1.61%
Environmentally Protected Parks	52.00	2.67%
Total	**1,945.95**	**100.00%**

Last modified 08/10/05

POPULATION HISTORY TRENDS AND PROJECTIONS

The comprehensive plan must be based on well-documented population estimates and projections. Table 1-3 represents the population estimates for the City of Doral

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YEAR	POPULATION
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2005	33,633
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Sources U.S Census University of Florida BEBR Iler Planning Group (methodology) May 2005

TABLE 1-3: POPULATION PROJECTIONS, PERMANENT RESIDENTS, 2020-2050

2020	2025	2030	2035	2040	2045	2050
75,874	86,615	99,083	110,124	120,175	129,730	138,904

Sources: Estimates and projections by Shimberg Center for Housing Studies, based on 2010 and 2020 U.S. Census data and population projections by the Bureau of Economic and Business Research, University of Florida.

Population projections are an important component for growth management. The population projections in Table 1-3 is based on Shimberg Center for Housing Studies. Population growth is projected to continue in the City of Doral, and as a result there will continue to be an increased demand for the urban services and facilities that are needed to maintain and improve quality of life.

The City of Doral incorporated ~~in~~ on January 28, 2003. The Census 2000 figures showed a population of ~~21,000~~ 20,438 persons and while the housing units in the area were not recorded at this time, likely because Doral was a Census-Designated Place (CDP) then, in the next 2010 Census, a population of 45,705 was recorded, with 13,462 occupied housing units. ~~The city share of countywide population was 8.6% rate during the 2010 – 2020 period.~~ As of 2020, the City comprised approximately 2.8% of Miami-Dade County's total population. The City's population estimates and projections are shown on Table 1-3. The City estimates that its current population is approximately 86,615, an increase of about 89.5% over the 15-year period (2010-2025).

~~AVAILABILITY OF SERVICES AND FACILITIES~~

~~The most important function of the Comprehensive Plan is ensuring the availability of services and infrastructure meets the demands of the existing and future population and land uses. The Comprehensive Plan establishes level of service for roadways, transit, potable water, sanitary sewer, drainage, and parks and recreation. The Capital Improvements Element identifies improvements needed to meet or exceed the level of service standards,~~
~~Potable Water~~

~~The City of Doral is provided with potable water services through Miami-Dade Water and Sewer Department (WASD), with Biscayne Aquifer as the source of potable water in Miami-Dade County.~~

~~**LOS STANDARD –** The City's Level of Service Standard for potable water is as follows:~~

~~**REGIONAL TREATMENT –** System shall operate with a rated capacity that is no less than 2% above maximum daily flow for the preceding year.~~

~~**USER LOS –** Maintain capacity to produce and deliver INSERT gallons per capita per day (gpd).~~

~~**WATER QUALITY –** Meet all County, State and federal primary potable water standards.~~

~~**COUNTYWIDE STORAGE –** Storage capacity for finished water shall equal no less than 15% of Countywide average daily demand.~~

~~WASD is in charge of maintaining the distribution and treatment facilities that serve the City. Since the system is owned and maintained by Miami-Dade County, no potable water improvements or projects are programmed or planned by the City. The programmed and funded capital improvements scheduled in the current Miami-Dade County Capital Improvement Plan for implementation in the next five years will allow the WASD water system to meet demand projections and maintain the LOS standards. Therefore, no adjustments are required in the Future Land Use Map.~~

~~Sanitary Sewer~~

~~The City's Level of Service Standard for potable water is as follows:~~

~~**LOS STANDARD –** 100 gallons per capita per day (gpd).~~

~~**REGIONAL WASTEWATER TREATMENT PLANTS –** System shall operate with a physical capacity of no less than the annual average daily sewage flow.~~

~~**WATER QUALITY –** Effluent discharged from wastewater treatment plants shall meet all federal, State, and County standards.~~

~~**CAPACITY –** The system shall maintain the capacity to collect and dispose of 102 percent of average daily sewage demand for the preceding 5 years.~~

~~The City of Doral does not maintain any sanitary sewer facilities within its corporate limits. The treatment, transmission and pumping facilities serving the City are provided by the Miami-Dade County Water and Sewer Department (WASD). Since the system is owned and maintained by Miami-Dade County, no sanitary sewer improvements or projects are programmed or planned by the City in the foreseeable future. The present system of sewage treatment provides an acceptable level of service; therefore, no adjustments are required in the Future Land Use Map.~~

~~Drainage Facilities~~

~~**LOS STANDARD –** The City's Level of Service Standard for stormwater drainage is as follows:~~
~~QUALITY - The drainage and performance standards established in Chapter 62-25, 25.015, F.A.C., as amended with treatment of the first inch of rainfall to meet water quality standards required by Chapter 62-302, 862-302.500, F.A.C., as amended.~~

~~**QUANTITY –** Post-development runoff should not exceed the pre-development runoff for a 25-year storm event, up to and including an event with 24-hour duration. In addition, the Standard requires onsite treatment of the first inch of rainfall or the first half-inch of runoff, whichever is greater.~~
~~The South Florida Water Management District (SFWMD) and Miami-Dade County currently operate all stormwater management facilities and programs within the City of Doral. The City has adopted level of service (LOS) standards for redevelopment and new development regarding water quality and quantity.~~

~~Solid Waste~~

~~The County's large Solid Waste Resource Recovery Facility is located within Doral, including the ash disposal area for the facility. Residential solid waste in the City of Doral is collected and disposed of by Miami-Dade County. Solid waste from nonresidential and multi-family properties is collected by private haulers and disposed of at various sites in Miami-Dade and Broward County. Solid waste disposal for the City is administered by the Miami-Dade County Department of Solid Waste Management (DSWM). Since the system is entirely owned and operated by the County, no solid waste facilities or improvements are planned by the City in the foreseeable future. At the present time, the county projects remaining solid waste capacity to be well in excess of the 5-year standard. The present system of solid waste collection and disposal provides an acceptable level of service, and no adjustments are required to the Future Land Use Map.~~

~~UPDATE- Transportation~~

~~Three (3) expressways surround Doral on three (3) sides, these are: the Palmetto Expressway, the Dolphin Expressway and the Homestead Extension of the Florida Turnpike. Other major road arterials traversing the City include NW 87th Avenue, NW 107th Avenue, NW 25th Street, NW 36th/41st Street (Doral Boulevard) and NW 58th Street. The City is currently experiencing excessive traffic congestion primarily in the eastern and southern areas; however roads in other areas of Doral such as NW 41st Street, NW 107th Avenue, and NW 58th Street can exhibit heavy congestion at peak periods of the day. Map II-7 in the Transportation Element shows the current LOS conditions on the primary roads in the City. Much of this traffic is regional in nature, either coming to Doral for daily employment, deliveries of goods and/or passing through to other destinations outside Doral. The City is a major regional employment center with over 100,000 workers coming into the City to jobs each week day. A key aspect of the City's vision is to provide more residential opportunities in Doral so that future workers~~

~~can live and work in the City. From a land use perspective, the City has changed dramatically since its formative years. Fifty years ago, the Doral area was planned by the County for industrial and office use due to its proximity to the airport. Eventual major expressway improvements made this industrial land use even more feasible. Little residential use was provided for in those earlier years. Over the 40+ years, major residential projects and the Doral golf resort (1962) have been built. However, the land use pattern remains predominantly industrial. The road system inside Doral has not been adequately maintained and improved by the State and the County over the years to accommodate the accelerating growth. Major portions of the arterial and collector system are not complete, particularly in the north areas of Doral. With incorporation, the new City of Doral is "playing catch-up" with respect to all forms of transportation, including road continuity and expansion, and transit service. The City's land use vision calls for the creation of "Downtown Doral" in the area in the area of NW 36th Street and NW 87th Avenue, which will introduce higher density mixed use to that central area. These mixed use projects will be expected to incorporate a high level of connectivity to area parcels, including new public roads, transit, bicycle and I. I-8 pedestrian improvements, thus relieving major arterials such as Doral Boulevard and providing viable nearby housing options for downtown workers. Another very important traffic concern in the City is the significant amount of heavy truck traffic traversing Doral on a daily basis from rock mining, solid waste facilities and heavy industrial, nearby and in the City. The City is moving aggressively to reduce this problem via the preparation of a Transportation Master Plan and development of a "truck route system" including new alternative roads that can be used by trucks outside the City. The proposed construction of NW 122nd Avenue in the Schedule of Capital Improvements is part of the truck route program. Traffic forecasted for the area in the Miami-Dade County Long Range Transportation Plan (2025) is projected to increase the amount of LOS "E" and/or "F" roadways in the Doral road system. To combat this anticipated increase in traffic, however, the City has identified several short-term transportation improvements needed, as well as several other potential short and long-term transportation projects. These improvements and potential improvements are detailed in the Transportation and Capital Improvement Elements of this document. As noted on the planned and programmed improvements, traffic in the City will be improved and an acceptable roadway level of service will be provided; However, downtown and community mixed use alternatives have been provided in the proposed Future Land Use Map to allow a workers to work and live in Doral thus reducing future work trips into and out of the City. In addition, large amounts of excess density has been removed form the future map which will reduce future traffic loads,~~

~~Currently, Metrobus provides service to Doral with seven routes as shown on Map II-5 in the Transportation Element. These routes are centered in the eastern and southern portions of the City. Doral is also in relatively close proximity to the new Metrorail Station located at NW 74th Avenue, west of the Palmetto Expressway. NW 87th Avenue extending north out of downtown Doral provides a direct route into the Metrorail Station. Transit ridership is relatively low in the City, similar to many other town and cities on the periphery of Miami-Dade County. Transit service to the City is inadequate and needs to be extended to other parts of Doral. An exclusive transit corridor should be established on NW 87th Avenue in the future to provide direct transit access between downtown and the 74th Street Metrorail Station. The City will work with Metrobus to add additional buses on identified routes to maintain programmed frequency of service. Based on these factors and the City's coordination with Metrobus, acceptable transit levels of service will be provided. In addition, the new downtown and community mixed use areas should provide sufficient densities and intensities of development to make transit more viable and important as a transportation mode in the future.~~

~~Parks and Recreation~~

~~The current level of service (LOS) standard for parks is 2.75 acres of park space per 1,000 residents; however the proposed new park LOS is 3.25 acres in 2005, ranging up to 4.25 acres by 2015. Parks were determined in the visioning process to be a primary quality-of-life issue for City residents. The City is in the process for developing master plans for each of its 3 major parks, inherited from the County, and constructing major improvements to those over the next 5 years. The community visioning also revealed a desire by~~

~~most residents for more and smaller parks, such as tot lots and passive parks, distributed within walking distance of most homes. With the completion of the master plans for its 3 major parks and creation of new parks as private development occurs, the City will have adequate park space to service its residents well into the future. Therefore, no adjustments to the Future Land Use Map are required. However, the 51-acre environmental conservation site in the northwest area of Doral has been designated as "Environmentally-Protected Parks" on the proposed City FLUM.~~

~~Schools~~

~~Public schools are allowed in all land use categories shown on the adopted Future Land Use Map, except in the Industrial and Restricted Industrial category.~~

FUTURE LAND USE

The Future Land Use Map (Map I-3) was created using the County's Future Land Use reflects Doral's vision and future land use needs. Table 1-4 provides the acreage and general range of density or intensity of the future land use for the gross land area included in each future land use category applicable to the City of Doral. The predominant land use in Doral is Industrial comprising 32.7% of the City, followed closely by the 5 residential (only) land use categories at 28.75%. Of the residentially designated lands in the City, about 2/3 are in the Estate and Low Density categories limiting density to 6 and 10 units per acre, respectively. Business lands make up 6.33% of the City's land base, while Institutional and Public Facilities area comprise 5.40%.

TABLE 1-4: ACREAGE WITH PERCENT DENSITY

Residential Land Use		
Land Use	**Acres**	**Percent**
Estate Density Residential	1104.52	11.51%
Low Density Residential	885.01	9.22%
Office Residential	304.33	3.17%
Traditional Neighborhood Development	115.50	1.20%
Moderate Density Residential	376.19	3.92%
Medium Density Residential	252.20	2.63%
High Density Residential	142.24	1.48%
Community Mixed Use	304.39	3.17%
Downtown Mixed Use	419.54	4.37%
Doral Décor District	241.89	2.52%
Sub-Total	**4145.80**	**43.20%**

Other Land Uses		
Land Use	Acres	Percent
Business	607.93	6.33%
Environmentally Protected Parks	51.10	0.53%
Industrial	2981.62	31.06%
Institutional and Public Facility	517.92	5.40%
Office	6.96	0.07%
Private Parks and Open Space	963.07	10.03%
Public Parks and Recreation	170.23	1.77%
Restricted Industrial	154.37	1.61%
Sub-Total	**5453.20**	**56.80%**
Grand Total	**9599.00**	**100.00%**

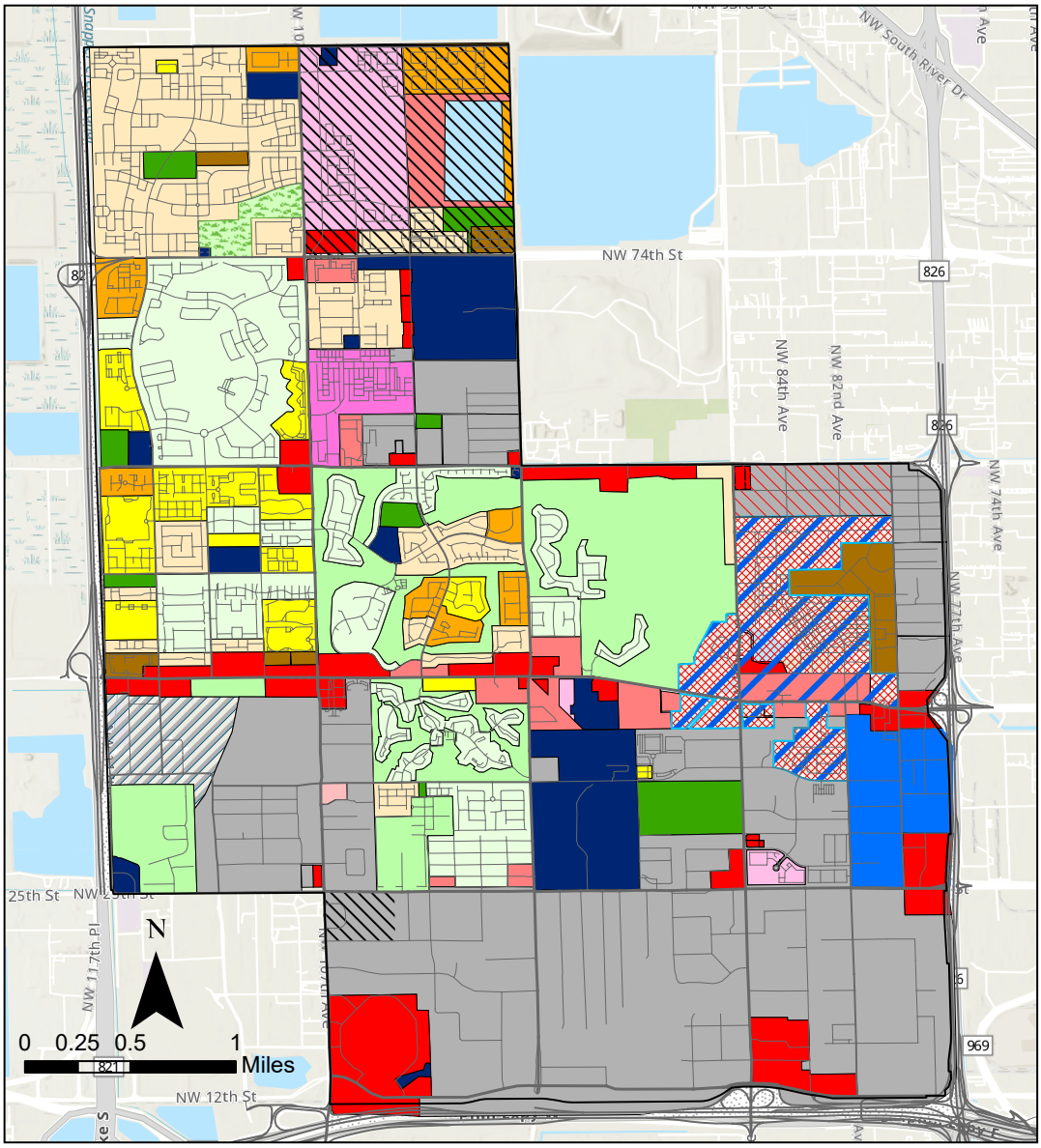
TABLE 1-4: CITY OF DORAL FUTURE LAND USE PROFILE

Land Use	Acres	Percent
Estate Density Residential (0 to 6 D.U. per Gross Acre)	948.47	9.58%
Low Density Residential (6 to 10 D.U. per Gross Acre)	870.17	8.79%
Moderate Density Residential (10 to 13 D.U. per Gross Acre)	352.25	3.56%
Medium Density Residential (13 to 19 D.U. per Gross Acre)	271.28	2.74%
High Density Residential (19 to 25 D.U. per Gross Acre)	88.29	0.89%
Downtown Mixed Use	174	1.76%
Community Mixed Use	19.25	0.19%
Traditional Neighborhood Development	371.91	3.76%
Business	624	6.30%
Office	6.96	0.07%
Office/Residential	353.04	3.57%
Industrial	3038.09	30.69%
Restricted Industrial	139.93	1.41%
Institutional and Public Facility	534.89	5.40%
Public Parks and Recreation	118.87	1.20%
Private Parks and Open Space	864.11	8.73%
Environmentally Protected Parks	52	0.53%
Expressway Right-of-Way*	197.57	2.00%
Water Bodies*	872.92	8.82%
Total	**9898**	**100.00%**

MAP 1-3: FUTURE LAND USE MAP

City of Doral Comprehensive Plan

Future Land Use Map



Legend

- Adaptive Reuse Area
- Business (B)
- Urban Central Business District
- Regional Activity Center
- Community Mixed Use (CMU)
- Doral Décor District
- Downtown Mixed Use (DMU)
- Environmentally Protected Parks (EPP)
- Estate Density Residential (EDR)
- Expressway Right of Way (EXPY)
- High Density Residential (HDR)
- Industrial (IND)
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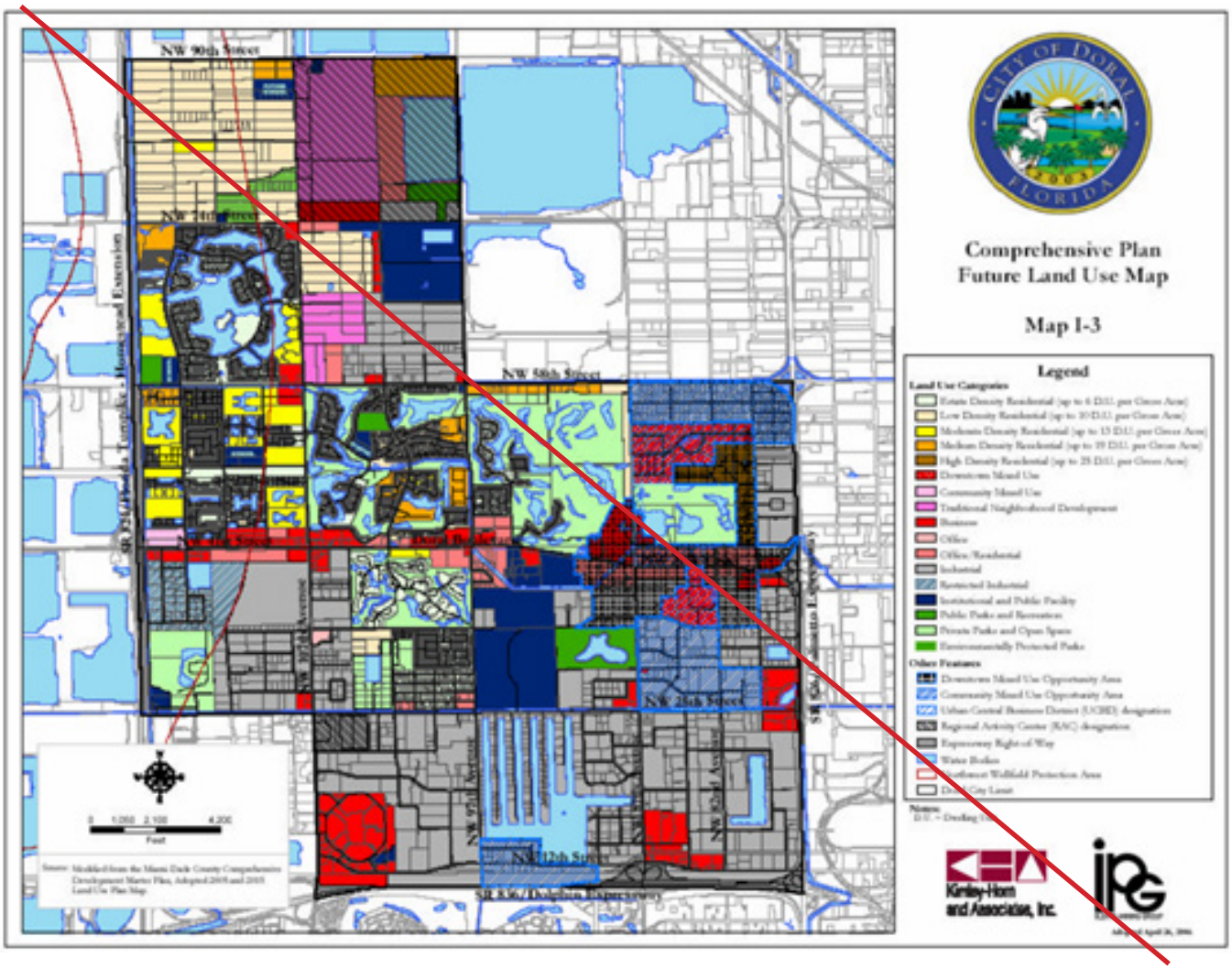
- Low Density Residential (LDR)
- Medium Density Residential (MDR)
- Moderate Density Residential (MoDR)
- Office (O)
- Office Residential (OR)
- Private Park (PrivPark)
- Public Park (PubPark)
- Restricted Industrial (RIO)
- Traditional Neighborhood Development (TND)
- DoralLimits



ESTATE DENSITY RESIDENTIAL

Areas designated Estate Density Residential on the Future Land Use Map may be developed with residential uses at up to 6 units per gross acre. This land use district comprises 1104.52 ~~948.47~~ acres in the City. Estate Density Residential is the most prevalent Future Land Use District in the City.

LOW DENSITY RESIDENTIAL

The Low Density Residential Future Land Use District permits residential units at up to 10 units per acre. Encompassing a total of 885.01 ~~870.17~~ acres.

MODERATE DENSITY RESIDENTIAL

The Moderate Density Residential Future Land Use District permits residential units at up to 13 units per acre. Encompassing a total of 376.19 ~~352.25~~ acres.

MEDIUM DENSITY RESIDENTIAL

The Medium Density Residential Future Land Use District permits residential uses at 13 to 19 units per acre. The Medium Density Residential District encompasses a total of 252.20 ~~271.28~~ acres.

HIGH DENSITY RESIDENTIAL (HDR)

The residential densities allowed in this category shall not exceed 25 dwelling units per gross acre. The types of housing typically found in areas designated high density include mid- and high-rise condominiums/apartments. Building height is limited to 10 stories. The High Density Residential District encompasses a total of 142.24 ~~88.29~~ acres.

DOWNTOWN MIXED USE (DMU)

This land use category allows business/retail, office and residential uses. It is limited only to parcels 10 acres or greater in size and is designed to provide for the horizontal and vertical integration of a diversity of urban-oriented uses at the city center. The City Council may consider DMU applications less than 10 acres in size if the property is adjacent to an existing DMU parcel, and located south of NW 58th Street, east of NW 87th Avenue, north of NW 33rd Street and west of NW 79th Avenue. A mix of uses are permitted and required for every DMU site. Hotel and related hospitality uses are allowed as part of the commercial mix, which said mix shall include a combination of at least two (2) of the following uses: (i) business/retail; (ii) office use; and (iii) residential use. In terms of location, areas designated as DMU should be within the city center area defined above for parcels less than 10 acres in size. Other DMU sites can be considered west of NW 87th Avenue provided they are located at major intersections along Doral Boulevard and meet or exceed the 10-acre size minimum. The conceptual site design and community connectivity plans for DMU sites shall identify strategic locations where vertical mixed use shall occur to facilitate multimodal options. At these locations, retail/commercial service businesses are encouraged to be located on the ground floor with office/residential uses above. This shall not preclude horizontal mixed-use development where the conceptual site design and community connectivity plans demonstrate that the functional arrangement of such uses achieves the purpose of the DMU category.

The base density allowed in the DMU category is limited to no more than 25 dwelling units per gross acre and maximum building height is eight (8) stories. All DMU project land use applications must be accompanied by a conceptual site design and community connectivity plan. Additional density up to 35 dwelling units per gross acre and height greater than 8 stories may be granted by the City Council for projects that exhibit creative excellence in exceeding the minimum standards contained in Section 86-83 of the City's Code. A workforce housing density bonus of up to 30% of total units may be granted by the City Council for the provision of at least two-thirds (2/3) of the approved bonus units as workforce housing in compliance with Miami-Dade County Code Chapter 17, Article IX, as amended, or applicable workforce housing regulations adopted by the City in the future. Landscaped open space in DMU must comprise a minimum of 10% of a project site. Floor area ratio (FAR) shall be limited to 0.5 for the first floor and 0.25 for each additional floor above, exclusive of structured parking.

COMMUNITY MIXED USE (CMU)

The purpose of this multiple use category is to provide a flexible land use palette for high activity nodes north, south and west of Doral's downtown, and at other special locations in the City such as gateways. It allows retail, service, office and residential uses and is limited to parcels 10 acres in size or greater, except for parcels with frontage on Doral Boulevard which can be seven (7) acres or greater in size. A mix of commercial and residential uses are permitted and required for CMU sites. Areas that may be deemed as appropriate by the City Council for the CMU designation and associated CMU projects are within the Community Mixed Use Opportunity Area (CMUOA) depicted on the FLUM. Retail and commercial service businesses and hotels may develop on single-use parcels within a mixed use setting in which no building is a distance of more than 330 feet from another building containing a different single use type or mixed use located on the same side of the street.

The base density allowed in the CMU category is limited to no more than 19 dwelling units per gross acre and maximum building height is 8 stories. Additional density up to 25 dwelling units per gross acre and height up to 10 stories may be granted by the City Council for projects that exhibit creative excellence in exceeding the minimum standards contained in Section 86-83 of the City's Code. A workforce housing density

bonus of up to 30% of total units may be granted by the City Council for the provision of at least two-thirds (2/3) of the approved bonus units as workforce housing in compliance with Miami-Dade County Code Chapter 17,as amended, Article IX or applicable workforce housing regulations adopted by the City in the future. Landscaped open space in CMU must comprise a minimum of 15% of a project site. Floor area ratio (FAR) shall be limited to 0.5 for the first floor and0.25 for each additional floor above, exclusive of structured parking.

Governmental and non-profit offices, parks, public facilities and recreational facilities are allowed in CMU. All zoning applications seeking to develop or redevelop within this category must be accompanied by a site-specific master development plan showing, at a minimum, the proposed uses, residential density, public realm improvements, internal transportation system, non-residential intensity, building mass, parks and open space, typical street orientation and building elevations, and external connectivity of the proposed development.

TRADITIONAL NEIGHBORHOOD DEVELOPMENT (TND)

The TND concept incorporates a broad mixture of uses, unique design, hierarchy of streets, and focus on pedestrian activity, low scale community support activities, and use of community buildings and open spaces as the focal point of the neighborhood. TND areas mandate the vertical and horizontal integration of uses such as residential, business, office, civic, public facilities, education and childcare, artisan and home occupations. Residential density cannot exceed 18 dwelling units per gross residential acre and all types of housing are allowed, including detached single-family units. Building height is limited to no more than eight (8) stories. The floor area ratio shall not exceed 4.0. A conceptual master development plan is required for zoning approval.

The following criteria must be met in order to achieve the TND land use designation:

1. Site must be under single ownership, cannot be located adjacent to Estate Density Residential areas and must be comprised of at least 40 contiguous gross acres; and
2. Public parks must be provided on-site equal to at least 50 percent the City's parks level-of-service standard; and
3. Civic uses, such as meeting halls, schools, day care centers and cultural facilities must comprise at least 2 percent of the developed area; and
4. Business, office and light industrial uses not vertically mixed with residential cannot comprise greater than 50 percent of the gross land area; and
5. Site must have an internal public spine road system and be connected to a minimum of two (2) separate external public roads.

BUSINESS (B)

* - This category accommodates the full range of sales service activities including retail, wholesale, personal and professional services, commercial and professional offices, hotels, motels, hospitals, theaters, medical buildings, nursing homes, entertainment and cultural facilities, amusement and commercial recreation establishments and university and college facilities. Building height is limited to no more than six (6) stories and landscaped open space must comprise a minimum of 15% of a project site. Floor area ratio (FAR) is limited to 0.5 for the first floor and 0.25 for every additional floor, exclusive of structured parking. In the Business land use strip immediately west of the Miami-Dade County Resource Recovery Facility along (theoretical) NW 102nd Avenue, uses that exhibit 24-hour site usage such as hotels, motels, hospitals, and nursing homes are not allowed.

OFFICE (O)

* - This category accommodates corporate, commercial and professional offices, hotels, medical buildings, and entertainment and cultural facilities. Five (5) percent of the floor area of Office parcels may contain retail and services uses. The maximum height allowed in this category is 14 stories and landscaped open space must comprise a minimum of 15% of a project site. Floor area ratio (FAR) is limited to 0.5 for the first floor and 0.25 for every additional floor, exclusive of structured parking.

OFFICE AND RESIDENTIAL (OR)

* - Uses allowed in this category include a mixture of both professional and clerical offices, hotels, motels and residential uses. The maximum density allowed is 16 units per gross residential acre. When residential uses are mixed with office uses, the overall scale and intensity shall be no greater than that which would be approved if the parcel was a parcel in either office only or residential use only, whichever is higher. Within the OR category, retail and service uses designed to primarily serve on-site businesses and residents may be integrated within a project in an amount not to exceed 10 percent of the total floor area. Building height is limited to no more than eight (8) stories and landscaped open space must comprise a minimum of 15% of a project site. Floor area ratio (FAR) is limited to 0.5 for the first floor and 0.25 for every additional floor, exclusive of structured parking.

INDUSTRIAL

* - This category allows industries, manufacturing operations, warehouses, mini-warehouses, office buildings, flex space showrooms with attached distribution/storage building areas, distribution centers, merchandise marts, public facilities, hospitals, medical buildings, hotels, convention facilities, restaurants, banks, university and college facilities and hotels. No rock quarrying or ancillary uses, amusement centers, entertainment, health/exercise and sport facilities are allowed in Industrial. Within this category, retail and service uses may be integrated within a project (land under unified control) in an amount not to exceed 15 percent of the total floor area. Building height is limited to the width of the public right-of-way fronting the subject property and landscaped open space must comprise a minimum of 15% of a project site. Floor area ratio (FAR) is limited to 0.5 for the first floor and 0.25 for every additional floor, exclusive of structured parking.

The adaptive reuse of existing buildings is encouraged in this category within the "Downtown Doral Art District" area bounded by NW 58th Street on the north, NW 54th Street on the South, NW 79th Avenue on the east, NW 87th Avenue on the west; that retail and service uses shall be permitted up to 100 percent of the total floor area and farmers market, food halls, entertainment, health/exercise and small scale recreational indoor/outdoor sports facilities are allowed in this area. Where landscaped open space or floor area ration is nonconforming to the requirements of the Future Land Use Element or the City's Land Development Code, the adaptive reuse of an existing building shall not require the provisions of additional landscaped open space or decrease in floor area ratio. The Installation of on-street parking and sidewalks shall be encouraged to the greatest extent possible or as required by Public Works in connection with any adaptive reuse of existing buildings within the district.

RESTRICTED INDUSTRIAL (RI)

* - Areas designated "RI" are parcels where the range of uses and design of facilities are governed by special groundwater protection regulations. This category primarily affects wellfield protection areas designated in Chapter 24-43(5) of the Miami-Dade County Code, as amended. Building height is limited to no more than four (4) stories and landscaped open space must comprise a minimum of 15% of a project site. Floor area ratio (FAR) is limited to 0.5 for the first floor and 0.25 for every additional floor, exclusive of structured parking.

INSTITUTIONAL AND PUBLIC FACILITY (IPF)

* - The IPF category allows major community institutional uses, public facilities and utilities, including hospitals, non-profit medical facilities, universities and colleges, regional water-supply, wastewater and solid waste utility facilities, religious institutions, governmental offices and facilities, public schools, police and fire stations and libraries. Building height in the IPF category is limited to no more than six (6) stories and landscaped open space must comprise a minimum of 15% of a project site. Floor area ratio (FAR) is limited to 0.5 for the first floor and 0.25 for every additional floor, exclusive of structured parking.

Public and non-profit institutional projects greater than 10 acres in size, located in a self-contained, master-planned setting may include adult living facilities for the elderly as an accessory use not to exceed 25% of the gross area of the project site.

PUBLIC PARKS AND RECREATION (PPR)

* - This land use category includes all public parks, developed (with recreational facilities) and undeveloped. Related and ancillary facilities are also allowed such as community centers, typical public recreational facilities, meeting rooms and office/storage space for parks administration and operation. Certain commercial activities ancillary to recreational uses and related to the resources of the park, such as boat supply stores, fuel docks, or tennis and golf clubhouses are also permitted. Other commercial recreation, entertainment or cultural uses may also be considered for approval in the PPR category if they would enhance the quality, utility or enjoyment of the site and its natural, historical or archeological resources and facilities. The floor area ratio for ancillary commercial, administrative, recreation, cultural and entertainment buildings shall not exceed 0.2.

PRIVATE PARKS AND OPEN SPACE (PPOS)

* - The PPOS category identifies private parks and open space areas, including private membership golf courses, cemeteries, and golf-oriented resorts. Privately owned golf courses open to the public are also contained in this category. Golf courses are allowed to have ancillary uses such as clubhouses, pro shops, other recreational facilities, administrative offices, maintenance facilities, meeting rooms, lounge, small gift shop, private restaurant (owner-operated only) and ballrooms. Golf- oriented resorts in this category may also include hospitality facilities reasonably related to the resort use such as health spas and hotel rooms. The floor area ratio for ancillary uses and hospitality facilities shall not exceed 0.25.

ENVIRONMENTALLY-PROTECTED PARKS (EPP)

* - This category includes existing lands that are environmentally sensitive and/or exhibit unique archeological features. All EPP areas shall be managed consistent with the goals, objectives and policies for development of the applicable environmental resources or protection area. Accordingly, resource-enhancing facilities including boardwalks, nature trails, canoe trails and launches, and interpretive facilities may be provided in these areas. The floor area ratio for incidental uses shall not exceed 0.1.

WATER BODIES

* - Water bodies depicted on the FLUM are not intended for any land use and are not counted toward gross density determinations for adjacent land areas unless they are inland waters wholly owned by the applicant.

REGIONAL ACTIVITY CENTER (RAC)

* - The Foreign Trade Zone (FTZ) site located at the southeast corner of NW 25th St. and NW 107th Av. and certain lands located in Section 8 (Township 53 South, Range 40 East), as depicted on the adopted FLUM, are hereby designated as "Chapter 380 Regional Activity Centers" pursuant to Chapter 28- 24.014(10)(b)2, Florida Administrative Code

URBAN CENTRAL BUSINESS DISTRICT (UCBD)

* - The downtown core area roughly described as the 120-acre Beacon City Center site located east of NW 87th Avenue between NW 54th Street and NW 48th Street, the 50-acre Ryder Shoma site on Doral Boulevard west of NW 82nd Avenue, and the 200-acre Downtown Doral South (formerly known as Doral Resort) site located east of NW 87th Avenue between NW 48th Street and NW 41st Street, and west of NW 82nd Avenue between NW 48th Street and Doral Boulevard (NW 36/41 Street), as depicted on the adopted FLUM, is hereby designated as "Urban Central Business District" pursuant to Chapter 28-24.014(10)(b)1, Florida Administrative Code.

DORAL DÉCOR DISTRICT (DDD)

* - This land use category establishes the core area of the Doral Decor District based on that envisioned in the Doral Design District Master Plan (2010). The Décor District boundary is depicted in the Future Land Use map. The DDD category allows light industrial uses, manufacturing, warehouses, mini-warehouses, offices, showrooms, distribution centers, merchandise marts, banks, tangible sales, utility maintenance

yards, utility plants, public facilities, hospitals, medical uses, hotels, convention facilities, restaurants, cultural facilities, entertainment venues and similar uses. No rock quarrying or its ancillary uses are allowed. Residential uses such as live/work and multi-family are permitted but are limited by the District-wide maximum of 5 units per gross acre and are required to be located in a building mixed with non-residential uses. The total number of units permitted in this Future Land Use Category is 925 dwelling units. The number of units permitted per project shall be drawn down from this number on a case-by-case basis, determined by criteria established in the Land Development Code. The maximum floor area ratio (FAR) is 4.75. Structured parking shall not be counted towards the floor area ratio.

LAND USE SUPPLY AND DEMAND ANALYSIS

This report evaluates the City of Doral's residential capacity and household size data (Tables 1-5 through 1-8) to confirm whether the City's Future Land Use (FLU) designations are adequate to accommodate projected long-term population growth. The analysis relies on data from the U.S. Census Bureau's American Community Survey (ACS) 5-Year Estimates (2023).

TABLE 1-5: RESIDENTIAL CAPACITY ANALYSIS

FLU Category	Acres	Max. DU/AC	Base Dwelling Units
Estate Density Residential	1,104.52	6	6,627
Low Density Residential	885.01	10	8,850
Office and Residential (OR)	304.33	16	4,869
Traditional Neighborhood Development	115.5	18	2,079
Moderate Density Residential	376.19	13	4,890
Medium Density Residential	252.2	19	4,792
High Density Residential	142.24	25	3,556
Community Mixed-Use	304.39	25	7,610
Downtown Mixed-Use	419.54	35	14,684
Doral Décor District	241.89	-	925
Total Dwelling Unit Capacity	**-**	**-**	**58,882**

TABLE 1-6: HOUSEHOLD SIZES

Jurisdiction	Average Household Size
City of Doral	3.04
Miami-Dade County	2.88

TABLE 1-7: ESTIMATED POPULATION BY CAPACITY SCENARIO

Jurisdiction	Average Household Size	Population Capacity (58,882 DU)
City of Doral	3.04	179,003
Miami-Dade County	2.88	169,581

Source: ACS 5-Year (2023) Estimates Data Profiles, Table DP04, U.S. Census Bureau.

TABLE 1-8: SUMMARY OF FUTURE LAND USE DESIGNATIONS AND EXISTING RESIDENTIAL LAND USE

Description	Total Residential Acreage	Developed Residential Acreage	Remaining Residential Acreage	Estimated Units Built (Existing LU × Max DU/AC)	Total Planned Capacity (DU)
All Residential FLU Categories (combined)	4,145.81 acres	2,608 acres	1,537.81 acres	41,766 units (approx.)	58,882 units

The City's FLU provides a total capacity of approximately 58,882 dwelling units, corresponding to a population capacity of up to 179,003 residents when using Doral's average household size of 3.04 persons per household, or 169,581 residents when using Miami-Dade County's average household size of 2.88 persons per household. For consistency with local conditions, calculations in this report primarily use Doral's household size of 3.04 persons per household when estimating total buildout capacity.

Population projections indicate growth from 75,874 residents in 2020 to 138,904 by 2050, as indicated in Table 1-3. Even applying a conservative planning assumption of 2.70 persons per household, the FLU supports a buildout population of approximately 158,981 residents, which exceeds the projected 2050 population.

At present, approximately 2,608 of the 4,145.81 acres designated for residential use are developed, leaving about 37 percent of residential land available for future growth. Although inconsistencies between FLU categories and existing land use classifications limit the precision of category-specific comparisons, the aggregate findings clearly demonstrate that the City has substantial remaining residential capacity within its adopted land use designations.

This analysis confirms that the City of Doral's current Future Land Use framework fully supports anticipated population growth through 2050. The City's residential land use capacity remains well above projected demand, ensuring that future housing needs can be met within the existing comprehensive planning structure.

EXISTING TRANSPORTATION CONDITIONS

EXISTING TRANSPORTATION SYSTEM OVERVIEW

Purpose

Local governments with jurisdiction within an urbanized area served by a metropolitan planning organization are required to prepare and adopt a Transportation Element consistent with Chapter 163, Part III, Florida Statutes. The City of Doral, located within the Miami-Dade County Transportation Planning Organization (TPO) planning area, which serves as the federally designated metropolitan planning organization for Miami-Dade County, has prepared this Transportation Element to guide the development and coordination of a safe, efficient, and multimodal transportation system.

The Transportation Element provides the policy framework for planning, operating, and maintaining transportation facilities and services within the City. It is supported by a comprehensive Data, Inventory, and Analysis (DIA) that evaluates existing transportation conditions, identifies system deficiencies, examines growth trends and travel patterns, and projects future transportation needs. The analysis considers the ability of the transportation system to serve existing and planned land uses, support emergency evacuation and hurricane preparedness, and accommodate future population and employment growth.

This Element uses short- and long-range planning horizons of 2035 and 2050, consistent with the Miami-Dade County TPO Long Range Transportation Plan. The Transportation Element establishes goals, objectives, and policies that:

- Provide for a safe, convenient, energy-efficient, and multimodal transportation system;
- Coordinate transportation planning with the Future Land Use Map to ensure consistency with existing and proposed population densities, housing patterns, employment centers, and land uses;
- Ensure coordination with the plans and programs of the Miami-Dade County Transportation Planning Organization, Miami-Dade County Department of Transportation and Public Works, the Florida Department of Transportation, and the Florida Transportation Plan;
- Address the provision of efficient public transit services based on existing and planned trip generators and attractors, including accommodations for the transportation disadvantaged, elderly, and persons with special needs;
- Protect existing and future transportation rights-of-way from encroachment; and
- Support hurricane preparedness, emergency evacuation, and post-disaster mobility.

The Transportation Element is organized around objectives addressing levels of service and mobility performance, alternative transportation modes, pedestrian and bicycle networks, coordination with land use and adjacent jurisdictions, growth management, capital improvements programming, and transportation financing. Together with the other elements of the City of Doral Comprehensive Plan, most notably the Future Land Use Element, this Element establishes an integrated framework for long-term transportation planning and investment.

Population Characteristics

The City of Doral has an estimated population of approximately 83,746 residents with an average household size of 3.07 persons and a median age of 37.2 years, reflecting a predominantly working-age population with a high share of family households. Approximately 45.4 percent of households include children and 18.5 percent of residents are age 65 or older, indicating daily transportation demand associated with commuting, school trips, and access to services for older adults.

Vehicle ownership averages 1.8 vehicles per household, demonstrating continued dependence on personal automobiles. Although household incomes exceed county averages, 36.2 percent of households are cost

burdened, reinforcing the importance of transportation affordability and access to employment and services. These characteristics support the need for a multimodal system capable of serving commuters, students, and residents with limited transportation options.

Ability of Transportation Facilities to Serve Existing Land Uses

Doral functions as a regional employment center with approximately 86,878 workers, significantly exceeding the resident workforce. The roadway network therefore primarily serves commuter and freight mobility associated with office, industrial, and commercial land uses. Travel patterns remain auto-oriented, with approximately 67.3 percent of commuters driving alone and only 4-5 percent using transit, walking, or bicycling combined. Average commute time is 25.1 minutes, slightly lower than the countywide average, indicating reasonable regional accessibility but reliance on roadway capacity.

Transit service is available through Miami-Dade County routes, the Tri-Rail Doral Shuttle, and the City's community shuttle system connecting residential areas to employment centers, commercial areas, and regional transit stations. However, multimodal performance remains limited, with WalkScore indicators of approximately 35 (transit), 53 (bicycle), and 39 (walkability). Overall, the transportation network effectively supports regional commuting and goods movement but provides more limited support for internal circulation by non-automobile modes between residential and employment areas.

Growth Trends, Travel Patterns, and Land Use-Transportation Interaction

Commuting patterns confirm Doral's role as a regional job center:

- 81,576 workers commute into the City
- 26,413 residents commute out of the City
- Only 7,011 workers live and work within Doral

This imbalance produces pronounced peak-hour traffic volumes on major corridors and highlights the strong interaction between concentrated employment land uses and regional travel demand.

Housing costs contribute to longer commute distances, increasing inbound daily traffic and regional roadway demand. Households spend approximately 34 percent of income on transportation, further emphasizing the importance of improving proximity between housing and employment and expanding mobility options. Existing development patterns generate primarily regional commuting rather than local internal trips. As the City grows toward the 2035 and 2050 planning horizons, improving multimodal connectivity and coordinating land use intensity with transportation capacity will be critical to managing congestion and maintaining mobility.

ROADWAY NETWORK AND LEVEL OF SERVICE

Functional Classification and Capacity

The functional classification of roadways is a framework used to organize the street and highway network based on the character of travel service each facility is intended to provide. Functional classification is a cooperative process conducted by the Florida Department of Transportation (FDOT) in coordination with local agencies and the Miami-Dade County Transportation Planning Organization (TPO), and it aligns with national standards adopted by the Federal Highway Administration (FHWA). This system is routinely reviewed and updated as part of the Urban Area Boundary and Functional Classification update process. Functional classification helps distinguish between roadways that primarily provide mobility (movement of people and goods) and those that primarily provide access (entry and exit to adjacent land uses). Roadways are assigned to categories based on their role in the overall network, typical traffic volumes and speeds, connectivity objectives, and the surrounding land use context.

The major thoroughfare network described here accommodates not only local and City mobility needs but also supports the broader regional transportation system

as defined by the Miami-Dade TPO and FDOT. Principal and minor arterials within Doral connect to state and interstate facilities, facilitating movement throughout the urbanized area, while collectors and local streets provide crucial connections to neighborhood destinations and support local land use patterns.

The major functional classification categories used in this Transportation Element are:

Interstate, Expressway, and Ramps

Principal arterials are the highest order of the roadway network within the urban transportation system. They serve major activity centers, accommodate high traffic volumes, and provide regional connectivity. These facilities typically support longer trip lengths and higher operating speeds, with limited direct land access in order to preserve mobility. Interstate highways, freeways, and other limited access facilities are examples of principal arterials. Within the City of Doral and the surrounding area, this includes facilities such as SR 836 (Dolphin Expressway), SR 826 (Palmetto Expressway), and SR 821 (Florida's Turnpike), which are classified as freeways under the FDOT functional classification system.

- SR 836 (Dolphin Expressway)
- SR 826 (Palmetto Expressway)
- SR 821 (Florida's Turnpike)

Major and Minor Arterials

Minor arterials provide connectivity between principal arterials and between local streets, and they carry moderate traffic volumes over moderate distances. They balance mobility and access, often serving as connectors between communities, commercial corridors, and local activity centers. Minor arterials accommodate local bus routes and play an important role in the urban multimodal system, facilitating travel within and between neighborhoods without penetrating directly into low-traffic residential streets.

- NW 58 Street
- NW 41 Street / NW 36 Street
- NW 25 Street
- NW 12 Street
- NW 107 Avenue

Major and Minor Collectors

Collector streets serve to distribute traffic between local streets and the arterial network. Collectors provide access within residential neighborhoods, commercial areas, and industrial zones, while also channeling traffic from local streets to higher-order arterials. These facilities typically have moderate traffic volumes and operate at lower speeds than arterials. In urbanized areas such as Doral, collectors also play a role in accommodating neighborhood access and supporting local transit circulation.

- NW 97 Avenue
- NW 79 Avenue

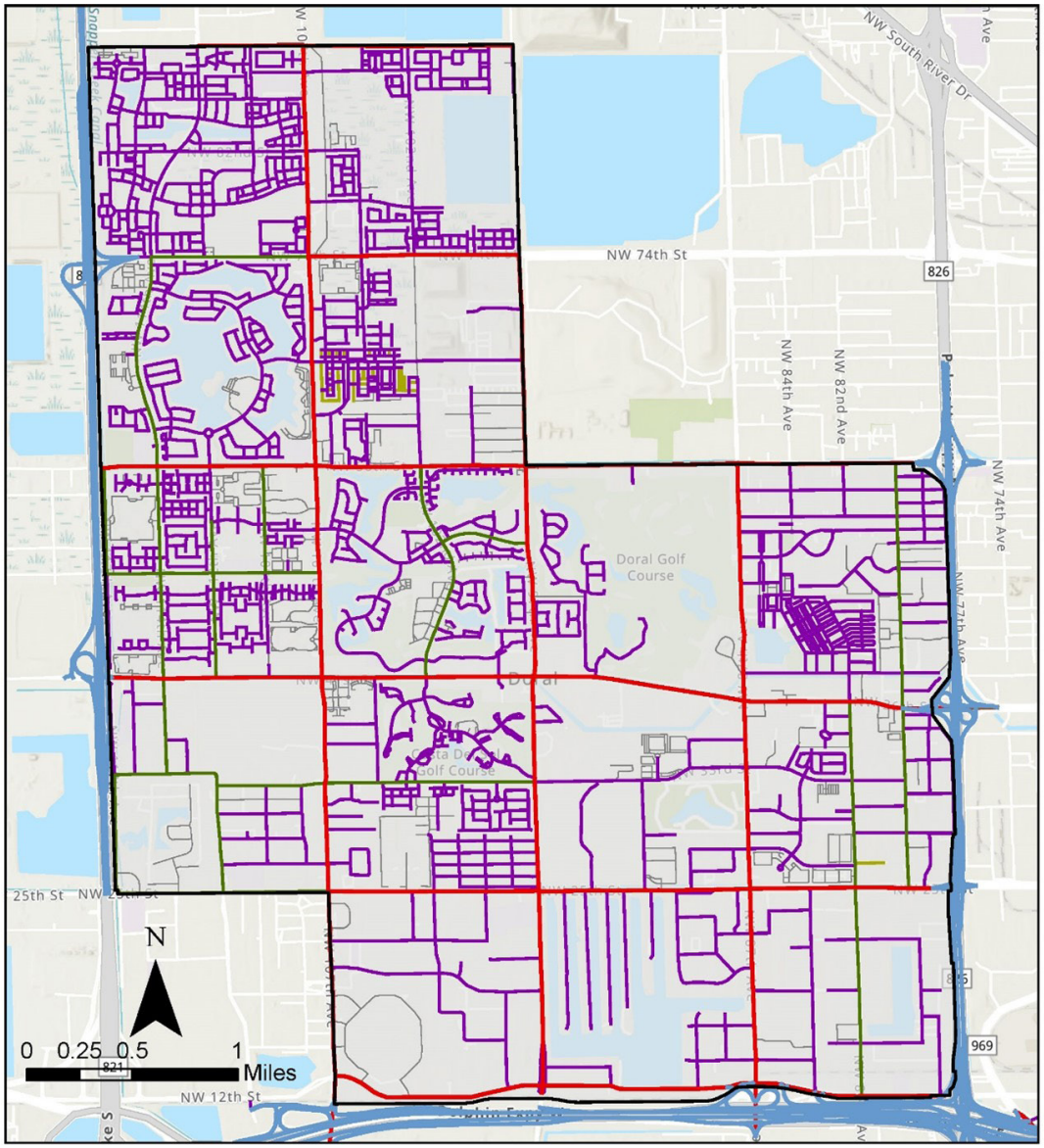
Local Streets

Local streets are the lowest tier of the functional classification hierarchy. They provide direct access to residential, commercial, and other abutting land uses and are not intended for through traffic. Local streets serve short trip lengths at low operating speeds and generally support low traffic volumes. These facilities are not the focus of this Transportation Element's major thoroughfare network table but are referenced for context and connectivity analysis.

MAP 2-1: FUNCTIONAL CLASSIFICATIONS

City of Doral Comprehensive Plan

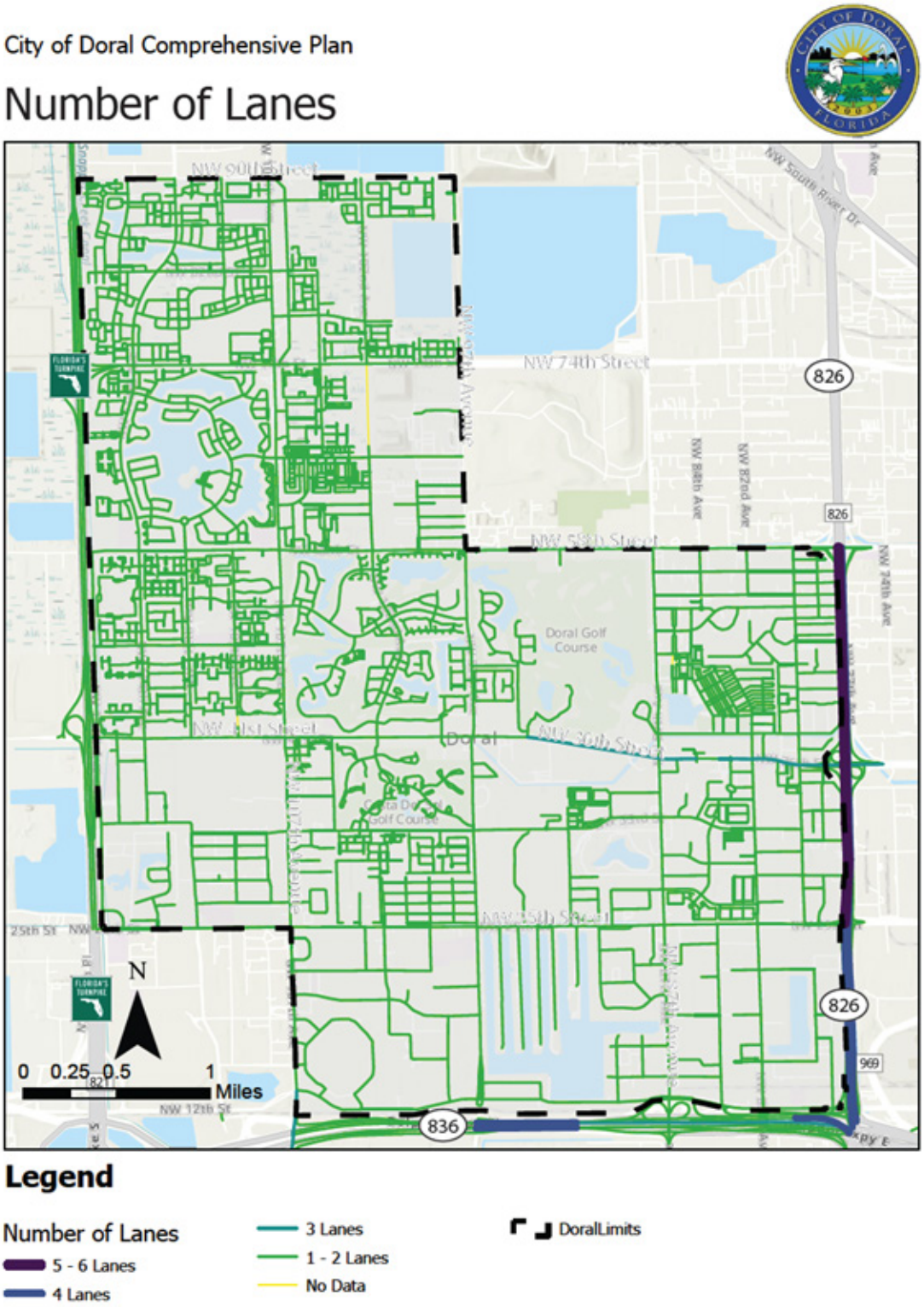
Functional Classification Map



Legend

- Interstate & Ramps
- Expressway
- Other Principal Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Local
- Doral Limits

MAP 2-2: NUMBER OF LANES



Existing Roadway Levels of Service

Automobile level of service is evaluated based on roadway operating conditions and is generally expressed in terms of the relationship between traffic demand and roadway capacity. LOS provides an indication of travel speeds, delay, maneuverability, and overall driving comfort experienced by motorists.

LOS is typically described using a scale ranging from LOS A through LOS F, with LOS A representing free-flow conditions and LOS F representing highly congested conditions where demand exceeds capacity. These measures are used by FDOT, the Miami-Dade County TPO, and local jurisdictions to evaluate roadway performance, identify deficiencies, and inform transportation planning and capital improvement decisions.

In general terms:

- LOS A represents free-flow conditions with high travel speeds, minimal delay, and unrestricted maneuverability.
- LOS B represents stable traffic flow with slight restrictions on maneuverability and minimal delays.
- LOS C represents stable traffic flow with noticeable constraints on speed and maneuverability and is commonly considered an acceptable operating condition in urban areas.
- LOS D represents traffic flow approaching unstable conditions, with reduced speeds, increased delays, and limited maneuverability.
- LOS E represents operating conditions at or near roadway capacity, characterized by low speeds, significant delays, and little flexibility for drivers.
- LOS F represents congested conditions where traffic demand exceeds roadway capacity, resulting in stop-and-go traffic and substantial delays.

Automobile LOS standards applicable to state and county roadways within the City are established in coordination with FDOT and Miami-Dade County and are applied consistent with adopted concurrency and mobility policies.

TABLE T-2

AVERAGE TRAVEL SPEEDS				
URBAN STREET CLASS	**I**	**II**	**III**	**IV**
Range of free-flow speeds (FFS)	55-45 MPH	45-35 MPH	35-30 MPH	35-25 MPH
Typical FFS	50 MPH	40 MPH	35 MPH	30 MPH
LOS	**AVERAGE TRAVEL SPEED (MPH)**			
A	>42	>35	>30	>25
B	>34-42	>28-35	>24-30	>19-25
C	>27-34	>22-28	>18-24	>13-19
D	>21-27	>17-22	>14-18	>9-13
E	>16-21	>13-17	>10-14	>7-9
F	<16	<13	<10	<7

MAP 2-3: EXISTING LEVEL OF SERVICE (2024)

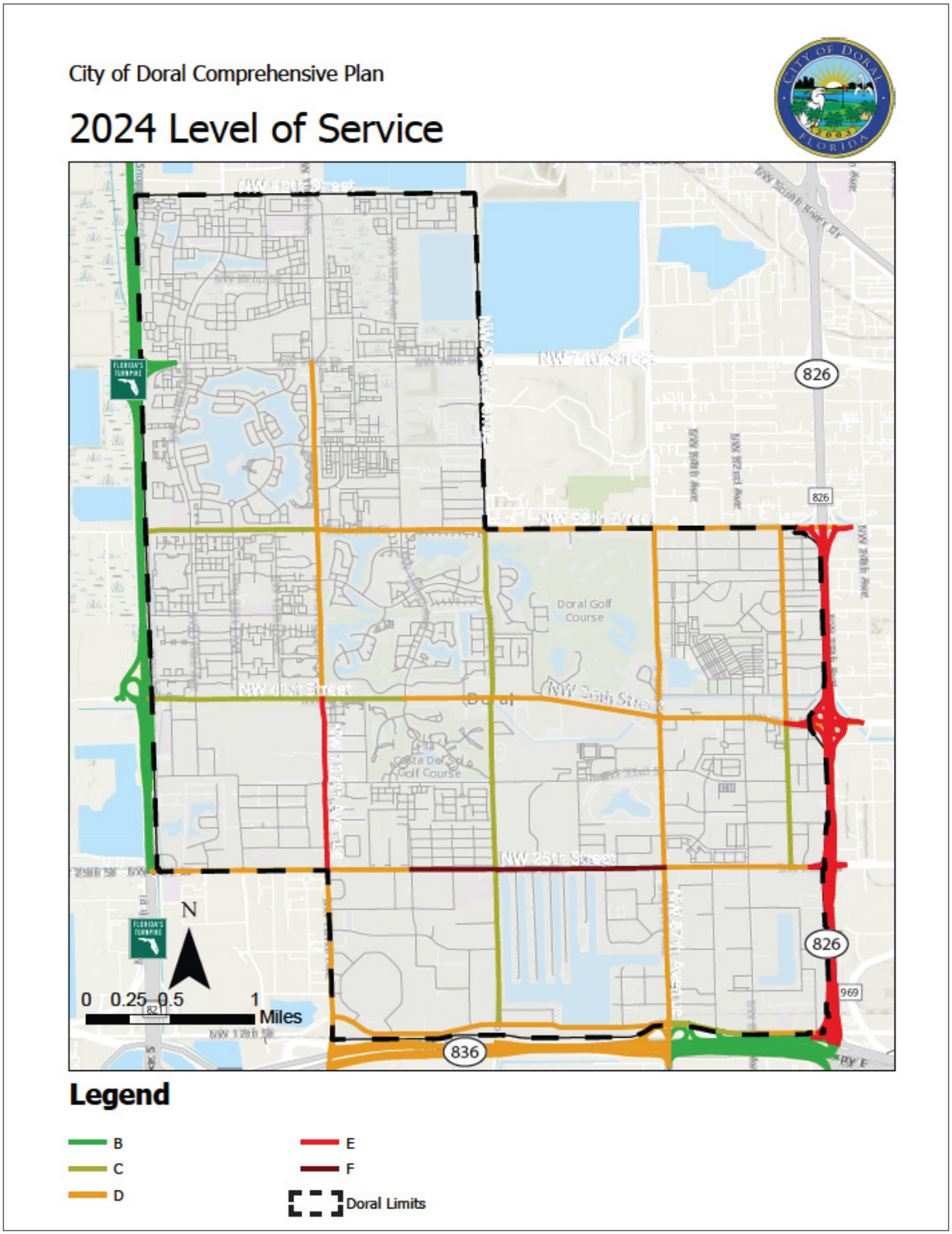


TABLE 2-1: EXISTING LEVEL-OF-SERVICE (LOS)

Roadway Segment Name	Limits of Corridor Segment		Functional Classification*	Number of Lanes	Existing Context Classification (2024) *	2024 AADT **	2024 Volume (Peak Hour/ Peak Direction) ***	Base Capacity	Adjusted Peak Hour/Peak Direction Base Capacity	2024 V/C Ratio	Current LOS
	From	To									
SR 836 Dolphin Expressway	Western City Limits/ NW 107 Ave	NW 87 Ave/ Galloway Road	Freeway Core Urbanized	8L-D	Core Urbanized	149301	8412	7700	8700	0.97	D
SR 836 Dolphin Expressway	NW 87 Ave / Galloway Road	SR 826 Palmetto Express	Freeway Core Urbanized	8L-D	Core Urbanized	86500	4873	4340	5340	0.91	B
SR 826 Palmetto Expressway	NW 58 Street/ Northern City Limits	NW 36 Street	Freeway Core Urbanized	12L-D	Core Urbanized	287000	13147	12760	14448	0.91	E
SR 826 Palmetto Expressway	NW 36 Street	NW 25 Street	Freeway Core Urbanized	12L-D	Core Urbanized	280000	12827	12760	14448	0.89	E
SR 826 Palmetto Expressway	NW 25 Street	SR 836/Dolphin Expressway Southern City Limits	Freeway Core Urbanized	12L-D	Core Urbanized	256000	11727	12760	14448	0.81	E
SR 821 Fl Turnpike	NW 90 St/ Northern City Limits	NW 74 Street	Freeway Core Urbanized	12L-D	Core Urbanized	119800	6070	6630	6630	0.92	B
SR 821 Fl Turnpike	NW 74 Street	NW 41 Street	Freeway Core Urbanized	12L-D	Core Urbanized	137101	6379	6630	6630	0.96	B
SR 821 Fl Turnpike	NW 41 Street	NW 25 Street / City Limits	Freeway Core Urbanized	12L-D	Core Urbanized	137101	6379	6630	6630	0.96	B
NW 58 Street	NW 117 Ave	NW 107 Ave	Non-State Collector C4	4LD	C4	13500	667	1210	1089	0.61	C
NW 58 Street	NW 107 Ave	NW 97 Ave	Non-State Arterial C4	4LD	C4	26500	1257	1790	1611	0.78	D
NW 58 Street	NW 97 Ave	NW 87 Ave	Non-State Arterial C4	4LU	C4	29500	1458	1790	1530.45	0.95	D

Roadway Segment Name	Limits of Corridor Segment		Functional Classification*	Number of Lanes	Existing Context Classification (2024) *	2024 AADT **	2024 Volume (Peak Hour/ Peak Direction) ***	Base Capacity	Adjusted Peak Hour/Peak Direction Base Capacity	2024 V/C Ratio	Current LOS
	From	To									
NW 58 Street	NW 87 Ave	SR 826 Palmetto Express	Non-State Arterial C4	4LU	C4	28500	1352	1790	1530	0.88	D
NW 41 Street	FL's Turnpike / NW 117 Ave	NW 107 Ave	Non-State Arterial C4	6LD	C3C	40500	2001	2360	2360	0.85	C
NW 41 Street	NW 107 Ave	NW 102 Ave	Non-State Arterial C4	6LD	C3C	43000	2125	2360	2360	0.90	C
NW 41 Street	NW 102 Ave	NW 93 Ct	Non-State Arterial C4	6LD	C4	47000	2229	2810	2529	0.88	D
NW 36 Street	NW 93 Ct	SR 826 Palmetto Express	Non-State Arterial C4	6LD	C4	44000	2174	2810	2655	0.82	D
NW 25 Street	NW 117 Ave	NW 112 Ave	Non-State Arterial C4	4LD	C4	27000	1334	1790	1611	0.83	D
NW 25 Street	NW 112 Ave	NW 102 Ave	Non-State Arterial C4	4LU	C4	27000	1281	1790	1530	0.84	D
NW 25 Street	NW 102 Ave	NW 87 AVe	Non-State Arterial C4	4LU	C4	37500	1779	2020	1727	1.03	F
NW 25 Street	NW 87 AVe	SR 826 Palmetto Express	Non-State Arterial C4	6LD	C4	41000	2026	2810	2655	0.76	D
NW 12 Street	NW 107 Ave	NW 97 Ave	Non-State Arterial C4	4LD	C4	27000	1281	1790	1611	0.80	D
NW 12 Street	NW 97 Ave	NW 87 Ave	Non-State Arterial C4	4LU	C4	31500	1494	1790	1530	0.98	D
NW 12 Street	NW 87 Ave	NW 82 Ave	Non-State Arterial C4	6LD	C4	28000	1383	2210	1989	0.70	C
NW 12 Street	NW 82 Ave	City Limits	Non-State Arterial C4	4LD	C4	26000	1285	1790	1611	0.80	D

Roadway Segment Name	Limits of Corridor Segment		Functional Classification*	Number of Lanes	Existing Context Classification (2024) *	2024 AADT **	2024 Volume (Peak Hour/ Peak Direction) ***	Base Capacity	Adjusted Peak Hour/Peak Direction Base Capacity	2024 V/C Ratio	Current LOS
	From	To									
NW 107 Avenue	NW 74 Street	NW 58 Street	Non-State Arterial C3C	4LD	C3C	31000	1532	1810	1810	0.85	D
NW 107 Avenue	NW 58 Street	NW 41 Street	Non-State Arterial C3C	4LD	C3C	30000	1482	1810	1810	0.82	D
NW 107 Avenue	NW 41 Street	NW 25 Street	Non-State Arterial C4	4LD	C4	33500	1655	2020	1818	0.91	E
NW 107 Avenue	NW 25 Street	NW 12 Street	Non-State Arterial C4	6LD	C4	41500	2051	2810	2529	0.81	D
NW 97 Avenue	NW 58 Street/ Northern City Limits	NW 52 Street	Non-State Collector C3C	2LU	C3C	10800	534	760	760	0.70	C
NW 97 Avenue	NW 52 Street	NW 33 Street	Non-State Collector C3C	4LD	C3C	10800	534	1520	1520	0.35	C
NW 97 Avenue	NW 33 Street	NW 25 Street	Non-State Collector C3C	4LD	C3C	20200	958	1520	1520	0.63	C
NW 97 Avenue	NW 25 Street	NW 12 Street	Non-State Collector C3C	4LU	C4	20200	998	1210	1035	0.96	C
NW 87 Avenue	NW 58 Street/ Northern City Limits	NW 36 Street	Non-State Arterial C4	4LD	C4	29000	1375	1790	1692	0.81	D
NW 87 Avenue	NW 36 Street	NW 12 Street	Non-State Arterial C4	6LD	C4	41000	1945	2810	2655	0.73	D
NW 79 Avenue	NW 58 Street/ Northern City Limits	NW 36 Street	Non-State Collector C4	4LU	C4	22500	1112	1790	1530	0.73	D
NW 79 Avenue	NW 36 Street	NW 25 Street	Non-State Collector C5	4LU	C4	15500	766	1210	1035	0.74	C

*Source: * Context Classification was obtained from Doral's Transportation Master Plan*
*** From FDOT Traffic Online Web-based mapping application reports . *** From 2024 AADT converted into peak hour directional based on AADT Report D and K Factors*
**** Using FDOT Traffic Trends Analysis Tool to develop a historical trend analysis calculating a compound annual historic growth rate by examining linear, exponential, and decaying exponential growth rates for the last 10 years of available data. A growth rate was determined for collectors, arterials, and expressways, respectively.*

Methodology

The evaluation of existing roadway operating conditions is based on an analysis of automobile level of service (LOS) for major roadway segments within the City of Doral. The analysis was conducted for the 2024 peak hour and peak direction, consistent with methodologies applied by the Florida Department of Transportation (FDOT) and the Miami-Dade County Transportation Planning Organization (TPO). Roadway segments included in the analysis reflect the City's major thoroughfare network, including freeway facilities, non-state arterials, and collector roadways. Each segment was evaluated using FDOT functional classification, existing roadway geometry, traffic control characteristics, and urban context classification, consistent with current FDOT and TPO planning and modeling practices.

Analysis of Existing Level of Service Conditions (2024)

An evaluation of existing roadway operating conditions was conducted for major roadway segments within the City of Doral using 2024 traffic data. The analysis evaluates automobile level of service (LOS) during the peak hour and peak direction, consistent with FDOT procedures and the Miami-Dade County Transportation Planning Organization (TPO) regional modeling and analysis practices. The evaluation considers roadway functional classification, number of travel lanes, geometric and operational characteristics, and adjusted base capacities reflective of urbanized context conditions. Overall, the roadway network exhibits a range of operating conditions typical of a fully urbanized area, with most arterial and collector facilities operating at LOS C or LOS D. Freeway facilities operate under more constrained conditions due to high regional travel demand. One non-state arterial segment is identified as operating under deficient conditions, while several other corridors operate near capacity and warrant continued monitoring.

Principal Arterials

* **SR 836 (Dolphin Expressway):** Segments of SR 836 operate at LOS B to LOS D, with volume-to-capacity (V/C) ratios ranging from approximately 0.91 to 0.97. The western segment between the City limits and NW 87 Avenue operates at LOS D, reflecting high commuter volumes and interchange influences. The eastern segment approaching SR 826 operates at LOS B, indicating comparatively stable flow conditions despite high traffic volumes.

* **SR 826 (Palmetto Expressway):** All analyzed segments of SR 826 operate at LOS E, with V/C ratios ranging from approximately 0.81 to 0.91. These segments carry extremely high average annual daily traffic volumes, exceeding 250,000 vehicles per day in several locations. While constrained, these conditions are consistent with the function of SR 826 as a regional beltway facility and are addressed through regional and state transportation planning efforts.

* **SR 821 (Florida's Turnpike):** Segments of Florida's Turnpike within the City operate at LOS B, with V/C ratios between 0.92 and 0.96. The facility's limited access design and controlled operations allow it to maintain stable operating conditions during peak periods despite high traffic demand.

Minor Arterials

* **NW 58 Street:** NW 58 Street operates at LOS C to LOS D, with V/C ratios ranging from approximately 0.61 to 0.95. Operating conditions become more constrained toward the eastern segments near SR 826, reflecting increased traffic volumes and signalized intersection spacing.

* **NW 41 Street / NW 36 Street:** Segments of NW 41 Street operate primarily at LOS C, transitioning to LOS D in more urbanized sections. The segment of NW 36 Street approaching SR 826 operates at LOS D, reflecting higher peak-hour demand and interchange-related traffic.

* **NW 25 Street:** NW 25 Street exhibits the most constrained conditions among non-state arterial corridors. Most segments operate at LOS D; however, the segment between NW 102 Avenue and NW 87 Avenue operates at LOS F, with a V/C ratio exceeding 1.00. This segment represents a localized roadway deficiency, indicating peak-hour traffic demand that exceeds available capacity.

- **NW 12 Street:** NW 12 Street generally operates at LOS C to LOS D, with V/C ratios ranging from approximately 0.70 to 0.98. The segment between NW 97 Avenue and NW 87 Avenue operates near capacity and should be monitored, though it does not currently meet the threshold for deficiency.

- **NW 107 Avenue:** Segments of NW 107 Avenue operate at LOS D to LOS E, particularly south of NW 41 Street where traffic volumes increase and the corridor transitions into a more urban context. These conditions are considered constrained but typical for a north–south arterial serving both local and regional travel.

Collectors

- **NW 97 Avenue:** NW 97 Avenue operates predominantly at LOS C, with V/C ratios generally below 0.70. These conditions indicate stable operations consistent with its functional classification as a collector roadway.

- **NW 79 Avenue:** NW 79 Avenue operates at LOS C to LOS D, with V/C ratios ranging from approximately 0.73 to 0.74, reflecting acceptable operating conditions for a collector facility in an urban environment.

Deficiencies and Constrained Conditions

Based on the 2024 level of service analysis, one roadway segment within the City is identified as operating at deficient conditions. NW 25 Street between NW 102 Avenue and NW 87 Avenue operates at LOS F, indicating peak-hour demand exceeding available roadway capacity. Several additional roadway segments operate near capacity, including portions of SR 826, SR 836, NW 12 Street, and NW 107 Avenue. These constrained conditions are characteristic of a fully urbanized transportation system and are consistent with regional travel patterns identified by the Miami-Dade County Transportation Planning Organization. No other roadway segments are identified as deficient at this time.

Performance and Capacity Conditions

With the exception of one deficient non-state arterial segment, the City's roadway network generally operates at acceptable levels of service for an urbanized area. Congestion is primarily concentrated along major east–west corridors and near expressway interchanges serving regional travel demand. These findings support the need for continued coordination with FDOT and the Miami-Dade County TPO, as well as consideration of multimodal strategies, operational improvements, and targeted enhancements to address localized deficiencies and support future mobility.

TRANSIT SYSTEM

Public transit service within the City of Doral is provided through a combination of regional fixed-route bus service operated by Miami-Dade County Department of Transportation and Public Works (DTPW) and locally operated circulator service provided by the City of Doral Trolley system. Together, these services provide connections between residential neighborhoods, employment centers, regional transit corridors, Metrorail stations, and major activity centers throughout Miami-Dade County.

Existing Transit Services

1. Miami-Dade Transit Metrobus

Regional transit service within Doral is primarily provided by the following routes:

- Route 36 / 36A – Doral – Airport- Miami Beach via NW 36 Street
- Route 95 / 95A / 95B – Express service toward Golden Glades Interchange and regional employment centers
- Route 132 – Tri-Rail Doral Shuttle connecting to regional commuter rail

These routes provide east-west connectivity along major arterial corridors and regional commuter access to employment areas including Miami International Airport, Downtown Miami, and Miami Beach.

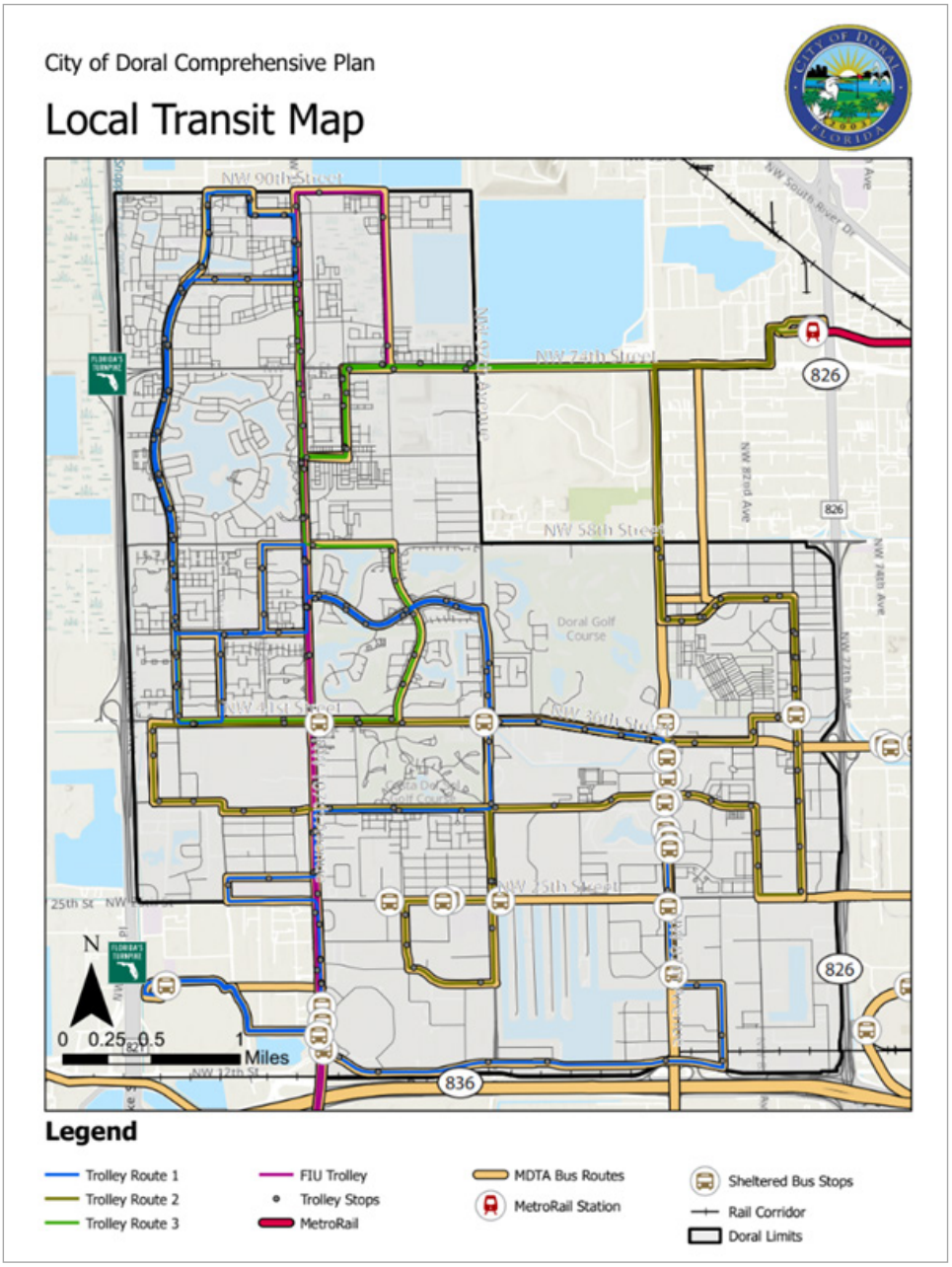
2. Doral Trolley System

The City operates a local circulator trolley system intended to provide first- and last-mile connections to regional transit and local destinations. The system includes:

- Route 1 – Crosstown Connector
- Route 2 – Commercial- Metrorail Connector
- Route 3 – Residential-Metrorail Connector
- Route 4 – FIU Connector

The trolley network links residential areas to major destinations including Palmetto Metrorail Station, Downtown Doral, Miami-Dade College West Campus, Florida International University Engineering Campus, retail centers, and major employment areas.

MAP 2-4: LOCAL TRANSIT ROUTES



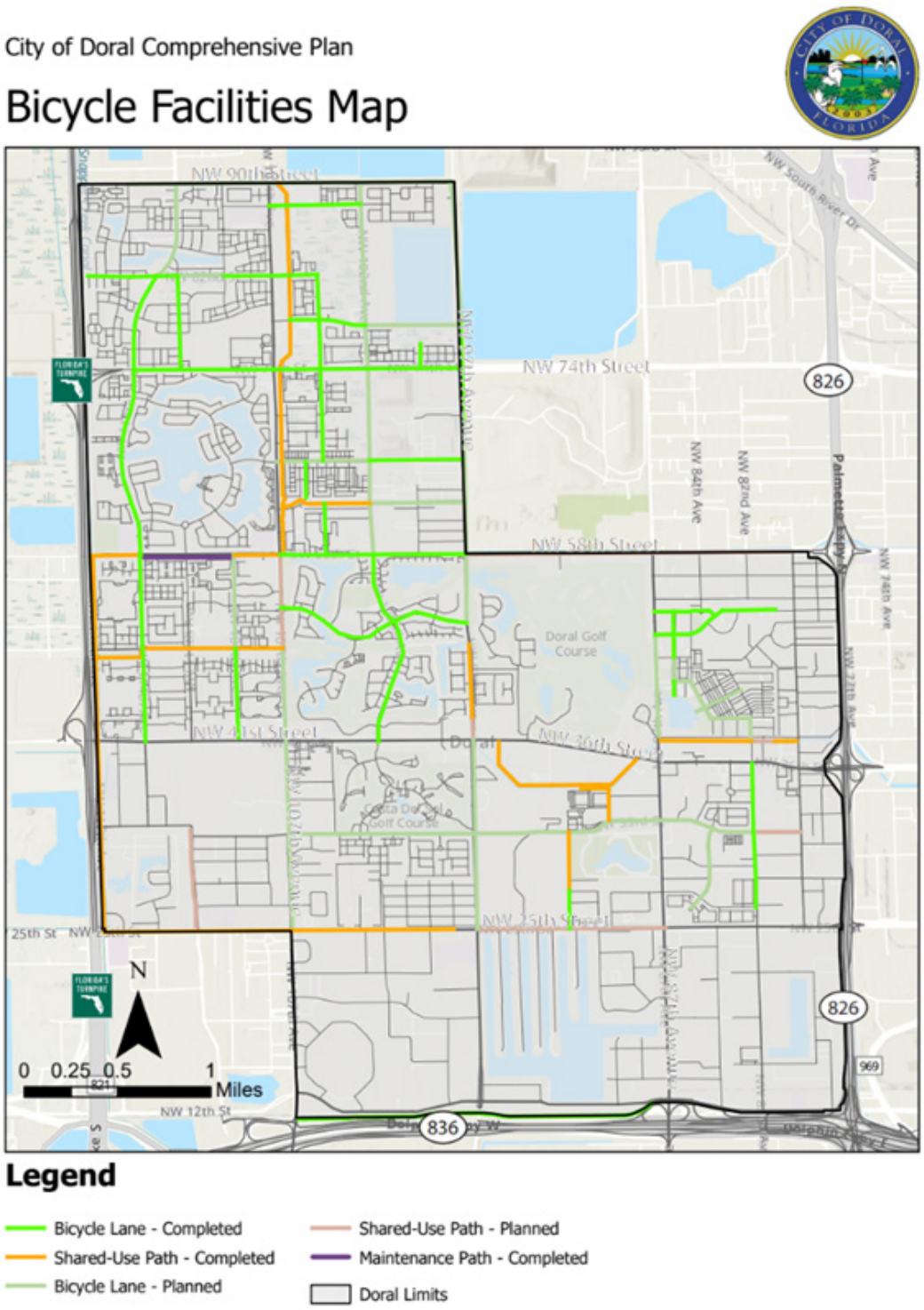
Bicycle and Pedestrian Facilities

In addition to vehicular level of service (LOS), the City evaluates multimodal mobility through bicycle and pedestrian level of service measures, which assess user comfort, safety, and facility suitability for non-motorized travel. These measures consider roadway characteristics including traffic speed and volume, separation from vehicular traffic, crossing conditions, presence of sidewalks or bicycle facilities, and overall network continuity. The Miami-Dade County Transportation Planning Organization (TPO) conducts regional multimodal evaluations as part of the long-range transportation planning process. These analyses support regional goals to improve safety, accessibility, and connectivity for walking and bicycling and provide a basis for local mobility planning and capital improvements. Within Doral, bicycle and pedestrian LOS information is used as a planning tool to identify gaps in connectivity, prioritize improvements, and support the development of a balanced multimodal transportation system.

Bicycle Network

The City's bicycle network consists of a combination of on-street bicycle lanes and shared-use paths located along major corridors and local streets. As illustrated in the Existing Bicycle Facilities Map, bicycle facilities are concentrated along primary east-west and north-south corridors, with additional local connections providing access to parks, schools, and employment areas. Planned facilities are intended to improve continuity between currently disconnected segments and expand access across the City.

MAP 2-5: BICYCLE AND PEDESTRIAN FACILITIES



Bicycle Level of Service

The Miami-Dade TPO evaluates bicycle conditions on arterial and collector roadways using the Florida Department of Transportation Quality/Level of Service methodology. The bicycle LOS measures roadway suitability for bicyclists based on traffic conditions, roadway geometry, and separation from motor vehicles. The resulting numerical score is categorized into a level of service from A (most comfortable) to F (least comfortable).

Bicycle LOS is used to identify corridors where facility improvements, separation, or traffic calming may be appropriate to improve rider comfort and safety.

Pedestrian Network

Pedestrian facilities in Doral include sidewalks along collector and arterial roadways, internal neighborhood walkways, and shared-use paths connecting residential areas to commercial centers, parks, schools, and transit stops. The pedestrian system supports local circulation and access to transit services, particularly in mixed-use and higher density areas.

Pedestrian Level of Service

The Miami-Dade TPO also evaluates pedestrian conditions along arterial and collector roadways using FDOT methodology. Pedestrian LOS considers factors such as lateral separation from traffic, vehicle speeds and volumes, driveway frequency, and roadway crossing conditions. Pedestrian LOS results help identify locations where crossing enhancements, sidewalks, buffering, or traffic calming improvements may be needed.

Sidewalk Coverage

Pedestrian facilities within the City of Doral are generally concentrated along major collector and arterial corridors, where continuous sidewalks provide primary access between residential neighborhoods, schools, parks, and commercial areas. Coverage is most complete along principal east–west corridors and within planned residential developments, where internal street networks include sidewalks on at least one side of the roadway. However, the network becomes less continuous along industrial and employment-oriented areas, where block lengths are longer and pedestrian accommodations are more limited. In these locations, sidewalks may be intermittent or located on only one side of the roadway, reducing overall walkability and increasing walking distances between destinations. Large roadway corridors and canal crossings also create barriers that limit pedestrian continuity and require travel to signalized intersections. Overall, while the City provides a functional sidewalk framework along primary travel corridors, gaps remain in older industrial areas and along certain collector streets, indicating opportunities for targeted infill connections.

Key Pedestrian Corridors

The pedestrian system is structured around several primary

TABLE 2-2: BICYCLE & PEDESTRIAN LEVEL OF SERVICE CLASSIFICATION

LOS	Score Range
A	< 1.5
B	1.5- < 2.5
C	2.5- < 3.5
D	3.5- < 4.5
E	4.5- < 5.5
F	> 5.5

Source: FDOT Quality/Level of Service Manual

corridors that function as the backbone of non-motorized mobility within the City. These corridors generally coincide with major east–west roadways that connect residential neighborhoods to employment centers, parks, schools, and transit services. North–south connections provide access across neighborhoods and link to regional facilities and transit stops. Higher pedestrian activity is expected along corridors serving mixed-use development areas, civic facilities, and transit connections, where shorter block lengths and destination clustering support walking trips. Shared-use paths and internal neighborhood street networks provide secondary connections that distribute pedestrian movement into surrounding residential areas. These primary corridors therefore function as pedestrian mobility spines, while local streets operate as feeders providing neighborhood-level access.

Safety Considerations

Pedestrian safety conditions vary based on roadway classification and surrounding land use patterns. Arterial corridors with higher traffic volumes and speeds present the greatest challenges for pedestrian comfort, particularly where crossings are spaced far apart. Long block lengths, turning movements at major intersections, and limited midblock crossings may increase exposure time for pedestrians. In areas where sidewalks are located directly adjacent to travel lanes, limited buffering reduces perceived comfort compared to segments with landscaped separation. Industrial areas with frequent driveways and truck movements also present potential conflict points. Conversely, local residential streets and internal neighborhood connections provide more comfortable walking conditions due to lower speeds and traffic volumes. Future improvements that may enhance safety include additional crossing opportunities, enhanced pedestrian refuge areas, and expanded buffer separation along higher-volume corridors.

FREIGHT AND RAIL, AVIATION, AND EMERGENCY MANAGEMENT

Freight and Rail Facilities

The City of Doral plays an important role in regional goods movement within western Miami-Dade County due to its concentration of warehouse, distribution, airport-support, and light industrial land uses. Freight travel is primarily accommodated along high-capacity arterial corridors including NW 36 Street (SR 948/Doral Boulevard), NW 25 Street, NW 74 Street, NW 79 Avenue, and NW 107 Avenue, which provide direct connections to regional facilities such as SR 826 (Palmetto Expressway), the Florida Turnpike (SR 91), and SR 836 (Dolphin Expressway). These corridors support truck circulation between industrial districts, commercial centers, and the Miami International Airport cargo area while minimizing heavy vehicle traffic on local residential streets.

A freight rail corridor located along the northern portion of the City provides rail service to industrial and logistics uses and connects to the broader South Florida freight rail system. Industrial areas adjacent to this corridor and along NW 25 Street and NW 79 Avenue are positioned to accommodate truck-to-rail transfers and large-scale distribution activity. Local industrial streets are designed to provide direct access to these arterials and expressways, supporting loading operations and heavy vehicle turning movements. The City coordinates with Miami-Dade County and the Florida Department of Transportation to maintain appropriate access management, turning radii, and signal operations along designated freight corridors to preserve roadway safety and operational efficiency.

Aviation Coordination

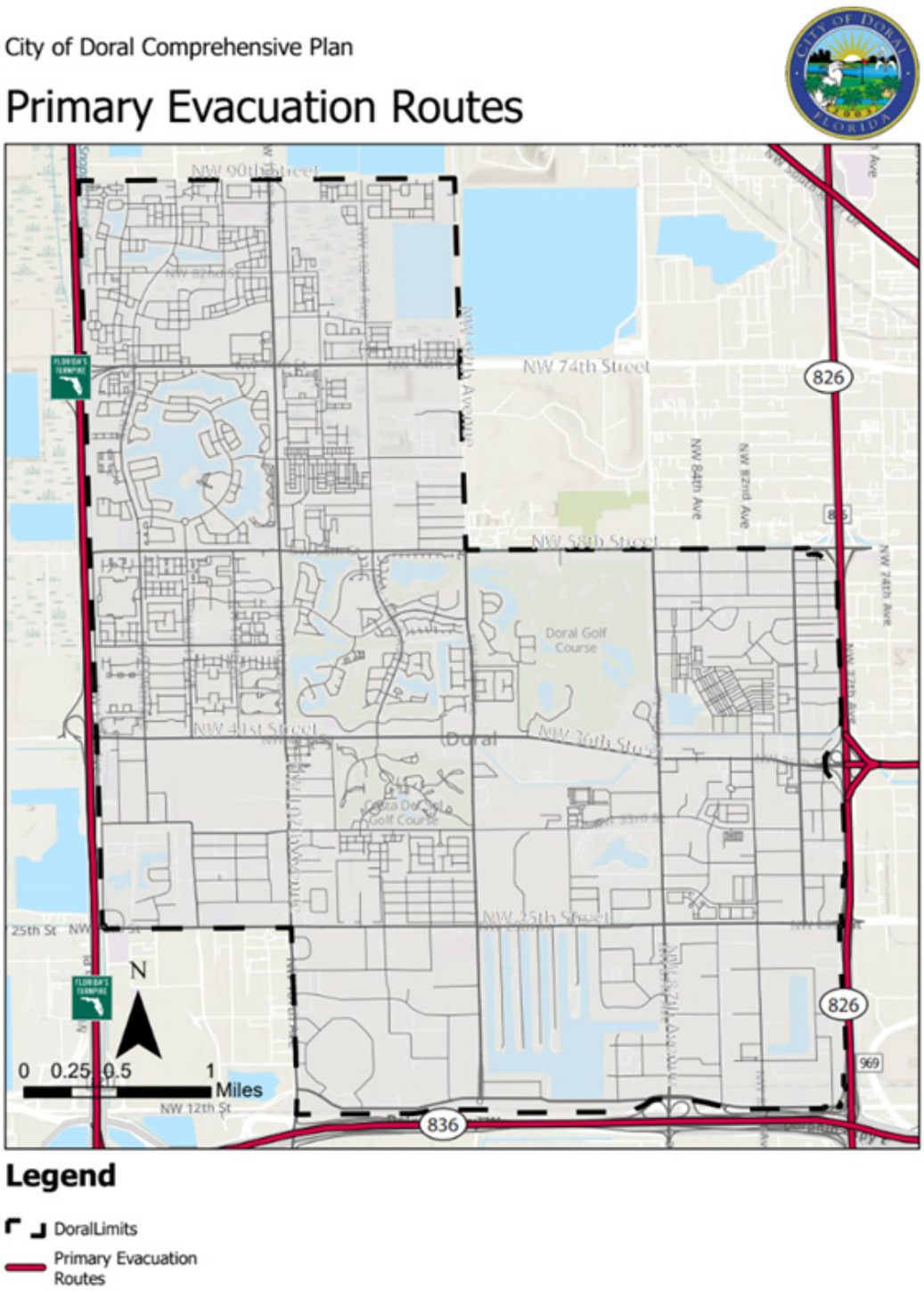
The City of Doral is located within the influence area of Miami International Airport (MIA). Accordingly, transportation and development activities must maintain compatibility with airport operations and navigable airspace. The City coordinates with the Miami-Dade Aviation Department (MDAD), the Federal Aviation Administration (FAA), and the Florida Department of Transportation (FDOT) Aviation Office during development review and infrastructure planning. Proposed structures, roadway lighting, utilities, and construction equipment that may affect protected airspace are reviewed pursuant to 14 CFR Part 77, and applicants are required to obtain FAA determinations where applicable prior to approval. The City also considers potential aviation

hazards, including glare, lighting interference, and wildlife attractants, when planning transportation improvements. This coordination ensures that transportation facilities and land development do not adversely affect airport operations while maintaining consistency with regional aviation safety requirements.

Emergency Evacuation Network

The City of Doral is served by a network of regional transportation facilities designated to accommodate emergency evacuation during hurricane and disaster events. As shown on the Primary Evacuation Routes Map 2-4, evacuation movements rely primarily on high-capacity expressways and major arterial corridors located along the City's perimeter that provide direct access to the Miami-Dade County regional evacuation system and inland sheltering areas. Because the City is located inland and outside of coastal storm surge evacuation zones, evacuation travel demand is generally associated with regional mobility and continuity of travel rather than coastal clearance. Accordingly, maintaining efficient access to adjacent limited-access facilities and major arterial corridors is essential to support outbound traffic flow during emergency conditions. Local roadway connections within the City function to distribute traffic from residential and employment areas to these regional facilities. The City coordinates with Miami-Dade County Emergency Management, the Florida Department of Transportation (FDOT), and the Miami-Dade County Department of Transportation and Public Works (DTPW) to preserve operational capacity along evacuation routes.

MAP 2-6: EMERGENCY EVACUATION ROUTES



FUTURE TRANSPORTATION CONDITIONS

FUTURE TRANSPORTATION NETWORK

Planned Roadway and Multimodal Improvements
Future Transportation Performance

Future Levels of Service Conditions

Methodology

Future roadway operating conditions for the City of Doral were evaluated using projected traffic volumes developed from regional travel demand forecasts and historic growth trends. Traffic volumes were applied to roadway segments using the adopted Miami-Dade County concurrency methodology and the FDOT Quality/Level of Service procedures. Peak hour, peak direction volumes were compared to adjusted roadway capacity to calculate volume-to-capacity ratios and determine Level of Service (LOS) for the planning horizons of 2035 and 2050. Capacity adjustments reflect roadway classification, number of lanes, operational characteristics, and urban context. The analysis evaluates roadway performance along principal arterials, minor arterials, and collector facilities forming the primary travel network within the City. Results are illustrated on the Future Level of Service maps and summarized in the accompanying tables.

Analysis of Future Level of Service Conditions

2035 Conditions

By 2035, several major corridors begin to experience degraded operating conditions during peak travel periods. Regional facilities and major east-west corridors show the greatest stress due to commuter travel entering and exiting the City's employment centers. Congestion is concentrated along expressway interchanges and adjacent arterial roadways where regional traffic converges with local circulation. While portions of the internal roadway grid continue to operate acceptably, segments serving industrial and employment areas begin to approach capacity. The roadway network remains functional but shows increasing dependence on intersection operations and corridor continuity to maintain acceptable travel times.

2050 Conditions

By 2050, projected growth in regional travel demand results in more widespread constrained conditions across the network. Several major corridors operate at LOS E or F during peak periods, particularly near expressway interchanges and along major east-west travel routes. Congestion expands beyond isolated intersections and becomes corridor-based, reflecting the City's role as a regional employment center attracting inbound commuter traffic. Local circulation routes continue to distribute traffic; however, capacity limitations on major facilities affect system performance across multiple roadway classifications. The future conditions indicate the roadway network transitions from localized congestion to sustained peak-period congestion along key mobility corridors.

MAP 2-7: FUTURE LEVEL-OF-SERVICE (2035)

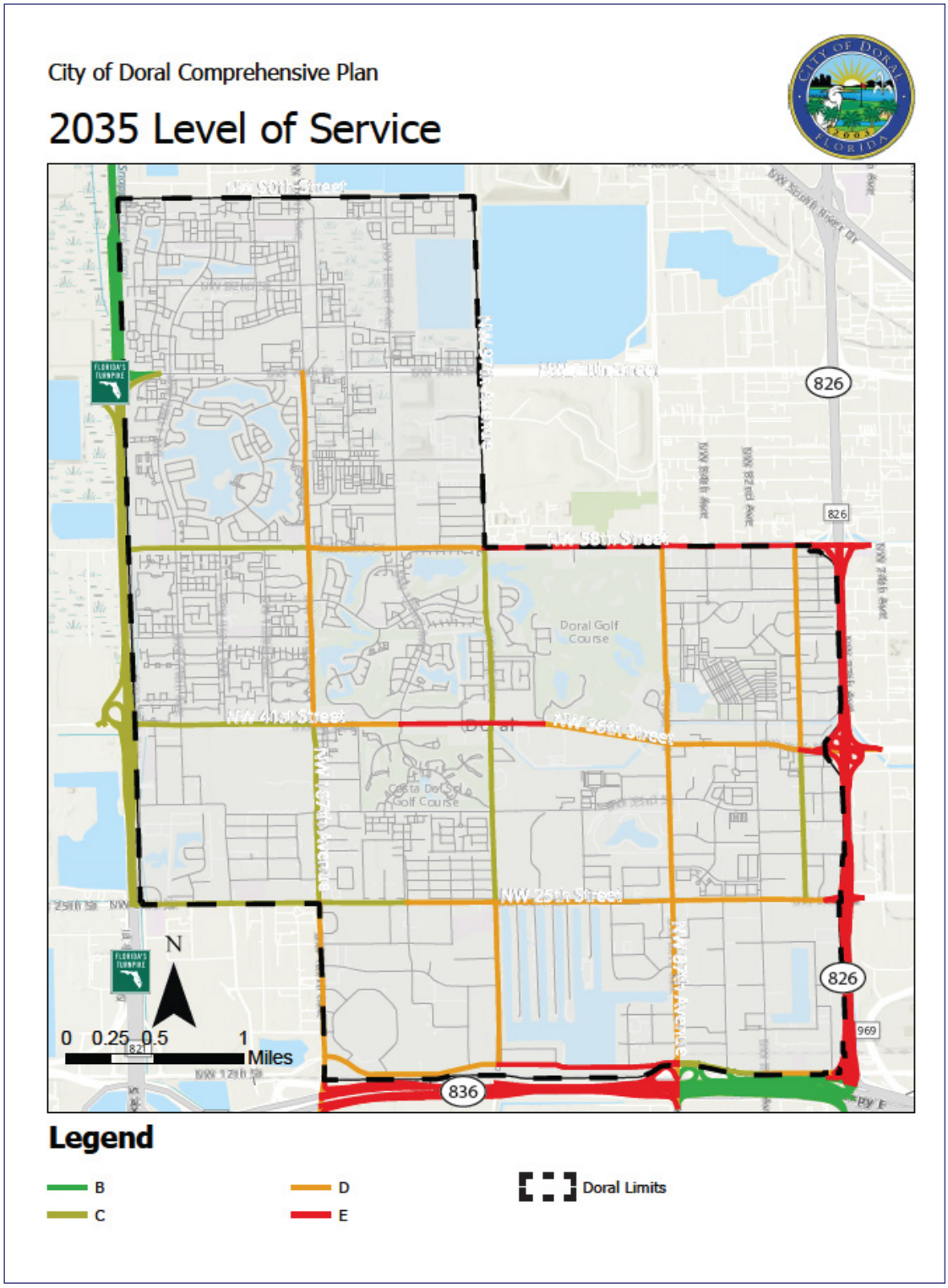


TABLE 2-3: FUTURE LEVEL-OF-SERVICE (2035)

Roadway Segment Name	Limits of Corridor Segment		Functional Classification*	2035 Volume (Peak Hour / Peak Direction)****	Number of Lanes	2035 V/C Ratio	2035 Projected LOS
	From	To					
SR 836 Dolphin Expressway	Western City Limits / NW 107 Ave	NW 87 Ave / Galloway Road	Freeway Core Urbanized	8886	8L-D	0.97	E
SR 836 Dolphin Expressway	NW 87 Ave / Galloway Road	SR 826 Palmetto Express	Freeway Core Urbanized	5148	8L-D	0.96	B
SR 826 Palmetto Expressway	NW 58 Street/ Northern City Limits	NW 36 Street	Freeway Core Urbanized	13888	12L-D	0.96	E
SR 826 Palmetto Expressway	NW 36 Street	NW 25 Street	Freeway Core Urbanized	13550	12L-D	0.94	E
SR 826 Palmetto Expressway	NW 25 Street	SR 836/Dolphin Expressway Southern City Limits	Freeway Core Urbanized	12388	12L-D	0.86	E
SR 821 Fl Turnpike	NW 90 St /Northern City Limits	NW 74 Street	Freeway Core Urbanized	6412	12L-D	0.97	B
SR 821 Fl Turnpike	NW 74 Street	NW 41 Street	Freeway Core Urbanized	6739	12L-D	0.73	C
SR 821 Fl Turnpike	NW 41 Street	NW 25 Street / City Limits	Freeway Core Urbanized	6739	12L-D	0.73	C
NW 58 Street	NW 117 Ave	NW 107 Ave	Non-State Collector C4	737	4LD	0.68	C
NW 58 Street	NW 107 Ave	NW 97 Ave	Non-State Arterial C4	1455	4LD	0.90	D
NW 58 Street	NW 97 Ave	NW 87 Ave	Non-State Arterial C4	1688	4LU	0.93	E
NW 58 Street	NW 87 Ave	SR 826 Palmetto Express	Non-State Arterial C4	1565	4LU	0.91	E
NW 41 Street	FL's Turnpike / NW 117 Ave	NW 107 Ave	Non-State Arterial C4	2317	6LD	0.98	C

Roadway Segment Name	Limits of Corridor Segment		Functional Classification*	2035 Volume (Peak Hour / Peak Direction)****	Number of Lanes	2035 V/C Ratio	2035 Projected LOS
	From	To					
NW 41 Street	NW 107 Ave	NW 102 Ave	Non-State Arterial C4	2460	6LD	0.92	D
NW 41 Street	NW 102 Ave	NW 93 Ct	Non-State Arterial C4	2580	6LD	0.96	E
NW 36 Street	NW 93 Ct	SR 826 Palmetto Express	Non-State Arterial C4	2517	6LD	0.95	D
NW 25 Street	NW 117 Ave	NW 112 Ave	Non-State Arterial C4	1544	6LD*****	0.78	C
NW 25 Street	NW 112 Ave	NW 102 Ave	Non-State Arterial C4	1483	6LD*****	0.78	C
NW 25 Street	NW 102 Ave	NW 87 AVe	Non-State Arterial C4	2060	6LD*****	0.86	D
NW 25 Street	NW 87 AVe	SR 826 Palmetto Express	Non-State Arterial C4	2345	6LD	0.88	D
NW 12 Street	NW 107 Ave	NW 97 Ave	Non-State Arterial C4	1483	4LD	0.92	D
NW 12 Street	NW 97 Ave	NW 87 Ave	Non-State Arterial C4	1730	4LU	1.00	E
NW 12 Street	NW 87 Ave	NW 82 Ave	Non-State Arterial C4	1601	6LD	0.80	C
NW 12 Street	NW 82 Ave	City Limits	Non-State Arterial C4	1488	4LD	0.92	D
NW 107 Avenue	NW 74 Street	NW 58 Street	Non-State Arterial C3C	1774	4LD	0.98	D
NW 107 Avenue	NW 58 Street	NW 41 Street	Non-State Arterial C3C	1716	4LD	0.95	D
NW 107 Avenue	NW 41 Street	NW 25 Street	Non-State Arterial C4	1916	6LD*****	0.96	C

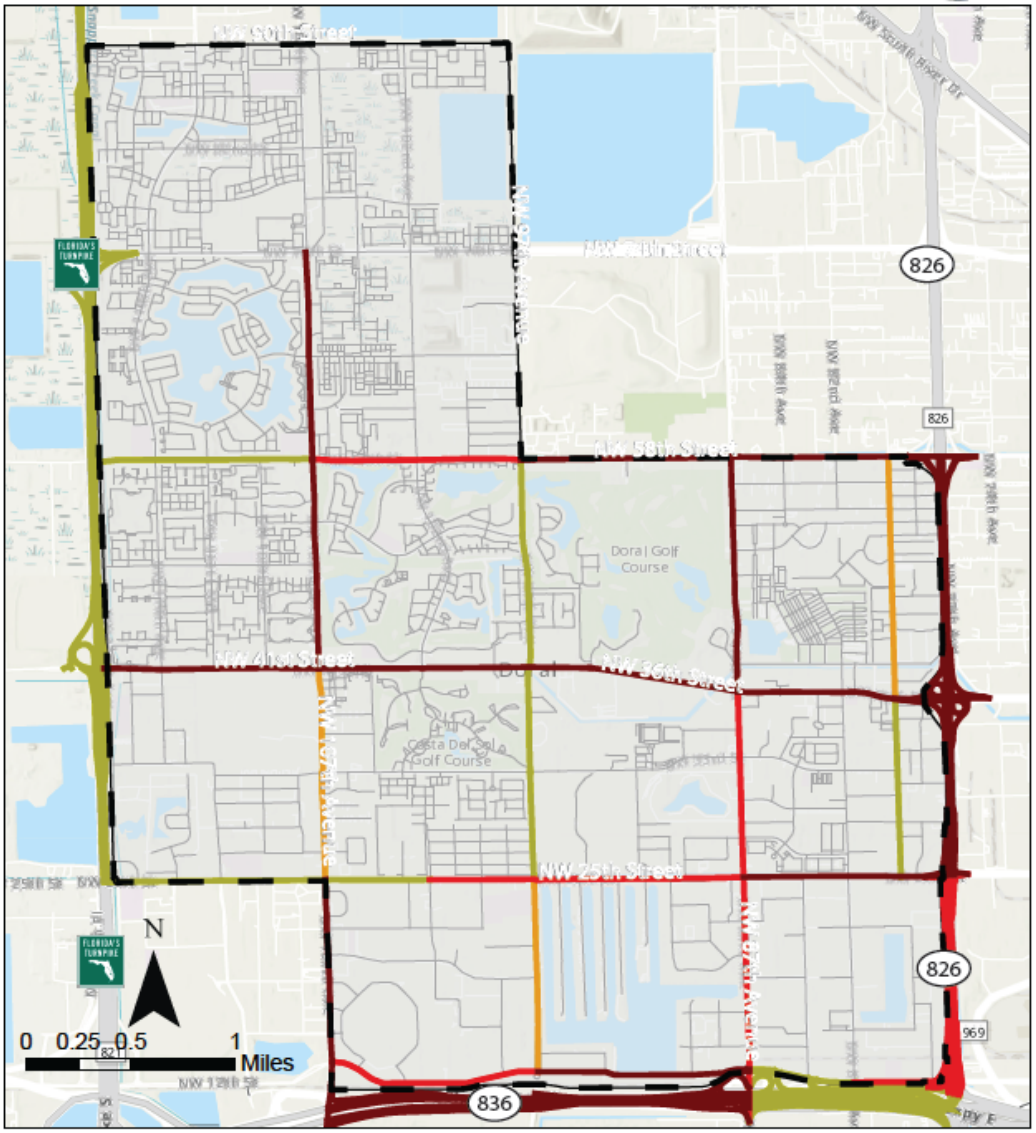
Roadway Segment Name	Limits of Corridor Segment		Functional Classification*	2035 Volume (Peak Hour / Peak Direction)****	Number of Lanes	2035 V/C Ratio	2035 Projected LOS
	From	To					
NW 107 Avenue	NW 25 Street	NW 12 Street	Non-State Arterial C4	2374	6LD	0.94	D
NW 97 Avenue	NW 58 Street/ Northern City Limits	NW 52 Street	Non-State Collector C3C	590	2LU	0.78	C
NW 97 Avenue	NW 52 Street	NW 33 Street	Non-State Collector C3C	590	4LD	0.39	C
NW 97 Avenue	NW 33 Street	NW 25 Street	Non-State Collector C3C	1058	4LD	0.70	C
NW 97 Avenue	NW 25 Street	NW 12 Street	Non-State Collector C3C	1103	4LU	0.72	D
NW 87 Avenue	NW 58 Street/ Northern City Limits	NW 36 Street	Non-State Arterial C4	1592	4LD	0.94	D
NW 87 Avenue	NW 36 Street	NW 12 Street	Non-State Arterial C4	2252	6LD	0.85	D
NW 79 Avenue	NW 58 Street/ Northern City Limits	NW 36 Street	Non-State Collector C4	1229	4LU	0.80	D
NW 79 Avenue	NW 36 Street	NW 25 Street	Non-State Collector C5	846	4LU	0.82	C

Source:
** Context Classification was obtained from Doral's Transportation Master Plan*
*** From FDOT Traffic Online Web-based mapping application reports*
**** From 2024 AADT converted into peak hour directional based on AADT Report D and K Factors*
***** Using FDOT Traffic Trends Analysis Tool to develop a historical trend analysis calculating a compound annual historic growth rate by examining linear, exponential, and decaying exponential growth rates for the last 10 years of available data. A growth rate was determined for collectors, arterials, and expressways, respectively.*

MAP 2-8: FUTURE LEVEL-OF-SERVICE (2050)

City of Doral Comprehensive Plan

2050 Level of Service



Legend

- C
- D
- E
- F
- Doral Limits

TABLE 2-4: FUTURE LEVEL-OF-SERVICE (2050)

Roadway Segment Name	Limits of Corridor Segment		Functional Classification*	2050 Volume (Peak Hour / Peak Direction)****	2050 V/C Ratio	2050 Projected LOS
	From	To				
SR 836 Dolphin Expressway	Western City Limits / NW 107 Ave	NW 87 Ave / Galloway Road	Freeway Core Urbanized	9577	1.04	F
SR 836 Dolphin Expressway	NW 87 Ave / Galloway Road	SR 826 Palmetto Express	Freeway Core Urbanized	5548	0.79	C
SR 826 Palmetto Expressway	NW 58 Street/ Northern City Limits	NW 36 Street	Freeway Core Urbanized	14967	1.04	F
SR 826 Palmetto Expressway	NW 36 Street	NW 25 Street	Freeway Core Urbanized	14603	1.01	F
SR 826 Palmetto Expressway	NW 25 Street	SR 836/Dolphin Expressway Southern City Limits	Freeway Core Urbanized	13351	0.92	E
SR 821 Fl Turnpike	NW 90 St /Northern City Limits	NW 74 Street	Freeway Core Urbanized	6910	0.75	C
SR 821 Fl Turnpike	NW 74 Street	NW 41 Street	Freeway Core Urbanized	7262	0.79	C
SR 821 Fl Turnpike	NW 41 Street	NW 25 Street / City Limits	Freeway Core Urbanized	7262	0.79	C
NW 58 Street	NW 117 Ave	NW 107 Ave	Non-State Collector C4	844	0.78	C
NW 58 Street	NW 107 Ave	NW 97 Ave	Non-State Arterial C4	1777	0.98	E
NW 58 Street	NW 97 Ave	NW 87 Ave	Non-State Arterial C4	2061	1.13	F
NW 58 Street	NW 87 Ave	SR 826 Palmetto Express	Non-State Arterial C4	1911	1.11	F
NW 41 Street	FL's Turnpike / NW 117 Ave	NW 107 Ave	Non-State Arterial C4	2828	1.06	F
NW 41 Street	NW 107 Ave	NW 102 Ave	Non-State Arterial C4	3004	1.12	F
NW 41 Street	NW 102 Ave	NW 93 Ct	Non-State Arterial C4	3151	1.17	F
NW 36 Street	NW 93 Ct	SR 826 Palmetto Express	Non-State Arterial C4	3073	1.09	F

Roadway Segment Name	Limits of Corridor Segment		Functional Classification*	2050 Volume (Peak Hour / Peak Direction)****	2050 V/C Ratio	2050 Projected LOS
	From	To				
NW 25 Street	NW 117 Ave	NW 112 Ave	Non-State Arterial C4	1886	0.95	C
NW 25 Street	NW 112 Ave	NW 102 Ave	Non-State Arterial C4	1811	0.96	C
NW 25 Street	NW 102 Ave	NW 87 AVe	Non-State Arterial C4	2515	0.98	E
NW 25 Street	NW 87 AVe	SR 826 Palmetto Express	Non-State Arterial C4	2864	1.01	F
NW 12 Street	NW 107 Ave	NW 97 Ave	Non-State Arterial C4	1811	1.00	E
NW 12 Street	NW 97 Ave	NW 87 Ave	Non-State Arterial C4	2112	1.22	F
NW 12 Street	NW 87 Ave	NW 82 Ave	Non-State Arterial C4	1955	0.98	C
NW 12 Street	NW 82 Ave	City Limits	Non-State Arterial C4	1816	1.00	E
NW 107 Avenue	NW 74 Street	NW 58 Street	Non-State Arterial C3C	2166	1.20	F
NW 107 Avenue	NW 58 Street	NW 41 Street	Non-State Arterial C3C	2095	1.16	F
NW 107 Avenue	NW 41 Street	NW 25 Street	Non-State Arterial C4	2339	0.92	D
NW 107 Avenue	NW 25 Street	NW 12 Street	Non-State Arterial C4	2899	1.08	F
NW 97 Avenue	NW 58 Street/ Northern City Limits	NW 52 Street	Non-State Collector C3C	676	0.89	C
NW 97 Avenue	NW 52 Street	NW 33 Street	Non-State Collector C3C	676	0.44	C
NW 97 Avenue	NW 33 Street	NW 25 Street	Non-State Collector C3C	1212	0.80	C
NW 97 Avenue	NW 25 Street	NW 12 Street	Non-State Collector C3C	1263	0.83	D
NW 87 Avenue	NW 58 Street/ Northern City Limits	NW 36 Street	Non-State Arterial C4	1944	1.02	F
NW 87 Avenue	NW 36 Street	NW 12 Street	Non-State Arterial C4	2749	0.97	E
NW 79 Avenue	NW 58 Street/ Northern City Limits	NW 36 Street	Non-State Collector C4	1407	0.92	D
NW 79 Avenue	NW 36 Street	NW 25 Street	Non-State Collector C5	969	0.94	C

*Source: * Context Classification was obtained from Doral's Transportation Master Plan*
*** From FDOT Traffic Online Web-based mapping application reports. *** From 2024 AADT converted into peak hour directional based on AADT Report D and K Factors*
**** Using FDOT Traffic Trends Analysis Tool to develop a historical trend analysis calculating a compound annual historic growth rate by examining linear, exponential, and decaying exponential growth rates for the last 10 years of available data. A growth rate was determined for collectors, arterials, and expressways, respectively.*

DEFICIENCIES AND CONSTRAINED CONDITIONS

The future analysis indicates that constrained operating conditions are concentrated along corridors influenced by regional travel demand and expressway access. The most affected areas occur near interchanges with SR 836 (Dolphin Expressway), SR 826 (Palmetto Expressway), and Florida's Turnpike (SR 821), where merging and weaving movements affect adjacent arterial operations. Major east-west corridors experiencing recurring constrained conditions include NW 36 Street (Doral Boulevard)/NW 41 Street, NW 25 Street, and NW 58 Street, particularly at locations approaching expressway ramps and major signalized intersections. These facilities carry significant commuter and airport-related travel and experience corridor-level congestion during peak periods. North-south facilities such as NW 107 Avenue, NW 79 Avenue, and portions of NW 97 Avenue experience operational impacts where traffic redistributes from congested expressways and east-west arterials. Industrial and freight-serving corridors, especially along NW 25 Street and adjacent collectors, also show constrained operations due to truck activity combined with commuter travel. Overall, deficiencies are not limited to isolated roadway segments but occur where regional and local traffic converge, resulting in congestion propagation from expressway facilities onto adjacent arterials and collectors. These conditions reflect regional travel demand patterns associated with employment concentration and airport access rather than a lack of internal street connectivity.

PERFORMANCE AND CAPACITY CONDITIONS

The future transportation network continues to provide overall connectivity throughout the City; however, peak-period operations become increasingly constrained along primary mobility corridors. By the planning horizon, sustained congestion is expected along NW 36 Street (Doral Boulevard) and NW 25 Street, with additional degradation along NW 58 Street and segments of NW 107 Avenue near major intersections and interchange areas. Collector facilities such as NW 79 Avenue and NW 97 Avenue increasingly function as alternate routes as drivers divert from congested arterials, resulting in moderate operational impacts but generally maintaining circulation function. Operational performance throughout the network becomes increasingly dependent on the performance of adjacent regional facilities, particularly SR 836 and SR 826, where recurring congestion influences multiple connecting corridors. Future capacity challenges are therefore primarily associated with regional commuter travel, freight movement, and employment-related trips rather than localized access limitations within residential areas.

MAINTAINING ADOPTED LEVEL OF SERVICE STANDARDS

The City of Doral will maintain the adopted level of service (LOS) standards through a coordinated approach combining transportation concurrency management, multimodal mobility strategies, capital improvements programming, and intergovernmental coordination. Development approvals are reviewed pursuant to Chapter 163, Florida Statutes and the Miami-Dade County concurrency management system to ensure impacts are mitigated through available capacity, programmed improvements, or proportionate share contributions prior to issuance of development orders. Because many constrained corridors function as regional facilities, the City coordinates mitigation and operational improvements with Miami-Dade County, the Florida Department of Transportation (FDOT), and the Miami-Dade Transportation Planning Organization (TPO). In addition to capacity enhancements, the City supports transit access, bicycle and pedestrian connectivity, signal coordination, access management, and transportation demand management measures to reduce peak hour vehicle demand. Improvements identified in the Capital Improvements Element, FDOT Five-Year Work Program, and the TPO Transportation Improvement Program are coordinated with land use decisions to ensure transportation capacity is provided concurrent with development and that adopted LOS standards are maintained as the City grows.

INTERGOVERNMENTAL COORDINATION AND CONCURRENCY

Relationship to the Regional Network

The City of Doral transportation system functions as part

of the larger regional network serving western Miami-Dade County and the South Florida metropolitan area. Major arterial roadways, expressways, and transit corridors within and adjacent to the City provide regional mobility for residents, employees, freight movement, and visitors. Because a significant share of daily travel both originates outside the City and travels through the City to regional destinations, coordination with state, regional, and county agencies is necessary to ensure consistent planning, funding, and implementation of transportation improvements.

The City coordinates transportation planning activities with the Florida Department of Transportation (FDOT), the Miami-Dade Transportation Planning Organization (TPO), and the Miami-Dade County Department of Transportation and Public Works (DTPW). Coordination occurs through the comprehensive plan amendment review process, development review, capital improvements programming, and participation in regional transportation planning initiatives.

FDOT COORDINATION

Several facilities serving Doral are part of the State Highway System and are planned, designed, and maintained by FDOT. The City coordinates with FDOT on roadway design, access management, signalization, safety improvements, and corridor studies affecting state facilities. Proposed land use changes adjacent to state roadways are reviewed for operational and safety impacts and are coordinated through FDOT's permitting and access review processes. Planned FDOT improvements identified in the Five-Year Work Program are reviewed by the City to ensure compatibility with local roadway connections, bicycle and pedestrian facilities, and adjacent land uses. The City also coordinates during development review to protect right-of-way needs and maintain the functional integrity of state facilities.

TPO CONSISTENCY

The City's Transportation Element is consistent with the Miami-Dade TPO Long Range Transportation Plan (LRTP) and Transportation Improvement Program (TIP). Planned roadway, transit, bicycle, and pedestrian improvements within the City are reviewed to ensure they support regional mobility goals, congestion management strategies, and multimodal connectivity. The City reviews LRTP and TIP updates and coordinates proposed local improvements with regionally funded projects to maximize system efficiency and avoid duplication of facilities. Through this process, local transportation priorities are incorporated into regional funding programs when appropriate.

ADOPTED LEVEL OF SERVICE STANDARDS AND COORDINATION

The City of Doral recognizes the adopted roadway level of service (LOS) standards established through the Miami-Dade County concurrency management system for state and county facilities within the urbanized area. These standards are intended to maintain acceptable mobility and travel conditions while accommodating growth consistent with regional planning objectives. Development applications within the City that impact state or county roadways are evaluated in coordination with Miami-Dade County and the Florida Department of Transportation (FDOT) to ensure that transportation capacity is available concurrent with development or that appropriate mitigation measures are provided.

MULTI-AGENCY REVIEW AND MULTIMODAL COORDINATION

Through its Development Review Committee, the City maintains an ongoing technical coordination process with the Miami-Dade Transportation Planning Organization (TPO), Miami-Dade County Department of Transportation and Public Works, FDOT, and adjacent municipalities. This interagency review ensures that proposed development and transportation improvements support an integrated multimodal transportation system and remain consistent with adopted LOS standards, regional mobility goals, and planned capital improvements.

INTERNAL CONSISTENCY WITHIN THE COMPREHENSIVE PLAN

The Transportation Element is coordinated with the

other elements of the City of Doral Comprehensive Plan, particularly the Future Land Use Element. Transportation analyses and improvement strategies are based on the planned distribution, density, and intensity of land uses shown on the Future Land Use Map (FLUM), ensuring that land use decisions and mobility planning function together to maintain system performance and support long-term growth. The Transportation Element is also coordinated with the City's adopted Transportation Master Plan and Transit Master Plan.

TRANSPORTATION APPENDIX

TABLE 2-5: FDOT FIVE-YEAR WORK PROGRAM (FY 2026-2030) PROJECTS AFFECTING CITY OF DORAL

Area	Project or Facility	From	To	Project Description	Years
Miami-Dade	NW 25 Street	NW 89 Court	SR 826	Add Lanes & Reconstruct	FY 2026-2030
Miami-Dade	SR 826 & SR 836 Interchange	NW 87 Avenue	NW 57 Avenue	Interchange (Major)	FY 2026-2030
Miami-Dade	SR 826 / Palmetto Expressway	I-75 South	SR 836	ITS Surveillance System	FY 2026-2030
Miami-Dade	SR 826 / Palmetto Expressway	North of NW 25 Street	NW 74 Street	Add Lanes & Reconstruct	FY 2026-2030
Miami-Dade	SR 826 / Palmetto Expressway	NW 62 Street	North of FEC Railroad	Add Lanes & Reconstruct	FY 2026-2030
Miami-Dade	HEFT Pavement Rehabilitation	—	—	Signing & Pavement Markings	FY 2026-2030
Miami-Dade	HEFT / Turnpike	SR 836	Okeechobee Plaza	Add Lanes & Rehabilitate Pavement	FY 2026-2030
Miami-Dade	HEFT Turnpike Interchange	—	—	Interchange Improvements	FY 2026-2030
Miami-Dade	NW 74 Street Interchange	—	—	Interchange Improvements	FY 2026-2030

TABLE 2-6: LRTP 2050 PROJECTS AFFECTING CITY OF DORAL

Area	Project or Facility	From	To	Project Description	Priority Level
Central/Northwest/ West	SR 826 & SR 836 Interchange	NW 87 Avenue	NW 57 Avenue	Widen Interchange to 10 Lanes	Priority I
Northwest	SR 826	NW 25 Street	NW 47 Street	Add Lanes & Reconstruct (8 to 10 Lanes)	Priority I
Northwest	NW 97 Avenue	NW 41 Street	NW 25 Street	2 to 4 Lanes	Priority I
Northwest	NW 74 Street	HEFT	NW 82 Avenue	New 3-Lane Roadway	Priority I
Northwest	NW 58 Street	NW 107 Avenue	NW 102 Avenue	2 to 4 Lanes	Priority I
West/Northwest	NW 97 Avenue Bridge	—	—	Construct Bridge over SR 836	Priority I
West/Northwest	SR 836 Extension	NW 111 Avenue	NW 87 Avenue	New Bi-Directional Mainline Toll Plaza	Priority I
Central/Northwest/ West	SR 836 Express Lanes	HEFT	SR 826/836	4-Lane Divided Express Lanes	Priority I
Beach/CBD/ Northwest/West	ITS Improvements	HEFT	A1A	CCTV, DMS, Sensors & Wireless	Priority II
Northwest	NW 87 Avenue	NW 36 Street	NW 58 Street	4 to 6 Lanes	Priority II
Northwest	NW 97 Avenue	NW 58 Street	NW 74 Street	2 to 4 Lanes	Priority II
Northwest	HEFT at NW 74 Street	—	—	Interchange (Major)	Priority III
Northwest	NW 107 Avenue	NW 41 Street	NW 25 Street	4 to 6 Lanes	Priority III

TABLE 2-7: FY 2026-2030 TIP PROJECTS AFFECTING CITY OF DORAL

Project or Facility	From	To	Project Description	Years
SR 826 & SR 836 Interchange	NW 87 Avenue	NW 57 Avenue	Interchange (Major) Widen to 10 Lanes	2026-2030
SR 826 / Palmetto Expressway	North of NW 25 Street	NW 74 Street	Add Lanes & Reconstruct to 10 Lanes	2026-2030
SR 826 / Palmetto Expressway	SR 836	SR 9 / I-75	ITS Surveillance System	2026-2030
HEFT	NW 74 Street	—	Interchange (Major)	2026-2030
SR 836 Express Lanes	HEFT	NW 37 Avenue	Provide 4-Lane Divided Express Lanes in Median	2026-2030
SR 836 Extension Toll Plaza	NW 111 Avenue	NW 87 Avenue	New Bi-Directional Mainline Toll Plaza	2026-2030
SR 836 Westbound	SR 826	NW 57 Avenue	Add Auxiliary Lane Westbound	2026-2030
Incident Management/ Surveillance	HEFT	I-95	Install Communications & Detection System	2026-2030

~~II. TRANSPORTATION ELEMENT~~

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~~TRANSPORTATION ELEMENT~~
~~DATA, INVENTORY, AND ANALYSIS~~

~~Local governments that have all or part of their jurisdiction included within the urbanized area of a Metropolitan Planning Organization (MPO) are required to prepare and adopt a Transportation Element consistent with the provisions of Chapter 163, Part III of the Florida Statutes. The purpose of the Transportation Element is to plan for a multimodal transportation system within the City of Doral. The objective of the Transportation Element Data, Inventory, and Analysis (DIA) Report is to describe and analyze transportation resources within the City of Doral, project future conditions, and prepare a foundation for the formulation of goals, objectives, policies and implementation programs.~~

~~Data has been collected, analyzed, and portrayed in text and graphic formats including a series of transportation maps. In this analysis, the City's Comprehensive Plan horizon year is 2030. The Transportation Element DIA Report presents:~~

- ~~An analysis of the existing transportation systems, including the ability of transportation facilities and services to serve existing land uses, and the adequacy of the existing and projected transportation system to provide adequate emergency evacuation routes;~~
- ~~Growth trends and travel patterns, including relationships between land use and transportation systems;~~
- ~~Projected transportation system levels of service;~~
- ~~An analysis of local and state transportation programs;~~
- ~~Establishment and maintenance of adopted level of service standards; and~~
- ~~Land use policy implications of transportation management programs necessary to promote public transportation.~~

~~DEFINITIONS OF TERMS AND CONCEPTS~~

~~**Classification of Major Thoroughfares.** Major thoroughfares are categorized into functional classification groups according to their character of service. The four functional classification groups for urban areas are principal arterials, minor arterials, collectors, and local streets. The extent and degree of access control is a significant factor in defining the functional classification of a roadway. Regulated limitation of access is necessary on arterials to enhance their primary function of mobility, while the primary function of local streets is to provide access. Functional classifications for major thoroughfares are defined in *A Policy on Geometric Design of Highways and Streets* (American Association of State Highway and Transportation Officials, 2001).~~

~~**Principal Arterials.** The principal arterial system serves the major centers of activity and the highest volume traffic corridors of urbanized areas. Principal arterials typically serve longer distance trips. Although principal arterials constitute a small percentage of the total roadway network, they carry a high proportion of total urban traffic. The principal arterial system also carries most of the trips entering and leaving the urban area. Service on principal arterials is normally continuous with relatively high traffic volumes, long average trip lengths and high operating speeds. Service to abutting land is typically subordinate to the provision of travel service and major traffic movements. Typical principal arterials include interstates, freeways, and other limited access facilities.~~

~~**Minor Arterials.** The minor arterial system interconnects and supports the principal arterial system. It accommodates trips of moderate lengths at a lower level of mobility than provided on principal arterials. Minor arterials provide continuity among communities and may also carry local bus routes. Ideally, minor arterials do not penetrate identifiable neighborhoods. The spacing of minor arterials is typically not much greater than one mile in most urbanized areas.~~

~~**Collectors.** The collector street system provides vehicular access to and mobility within residential neighborhoods, commercial, and industrial areas. It differs from the arterial system in that it penetrates neighborhoods and distributes trips from arterials to their ultimate destinations. Conversely, collectors also transition vehicular traffic from local streets onto the arterial system. The collector street system may carry local bus routes. Service on collectors has relatively moderate traffic volumes, average trip lengths, and average operating speeds.~~

~~**Local Streets.** The local street system comprises all roadways not in one of the higher systems. It provides direct access to abutting land uses and connections to the higher order systems. It offers the lowest level of vehicular mobility and usually contains no bus routes. Service to through traffic is often discouraged on local streets. Service on local streets has relatively low average traffic volumes, short average trip length, or minimal through traffic movements and high land access for abutting property.~~

~~**Level of Service.** Level of Service (LOS) standards can be determined for various public facilities. Within the urbanized area, level of service measurements are maintained for the automobile, however the Miami-Dade Transportation Plan for the Year 2030 also places special emphasis on meeting the needs of those individuals who walk or bike for mobility. Therefore, the Long Range Transportation Plan conducted an inventory of existing conditions for all roads within the Metropolitan Planning Organization's (MPO) long range street network, including those in the City of Doral, to determine the bicycle and pedestrian levels of service for each segment. LOS standards for automobile, bicycle, and pedestrian travel modes are discussed below.~~

~~**Automobile Level of Service.** *The Traffic Engineering Handbook* (Institute of Transportation Engineers, 1999) defines level of service for roadways (based upon the motorist's perspective) as:~~

> ~~*"A qualitative measure that characterizes operational conditions within a traffic stream and perception of these conditions by motorists and passengers. The descriptions of individual levels of service characterize these conditions in terms of factors such as speed and travel time, freedom to maneuver, traffic interruptions and comfort and convenience."*~~

~~This definition can be further simplified as the ratio of traffic volume to roadway capacity. The six different levels of service are described below:~~

- ~~LOS A - Represents an ideal condition of primarily free-flow traffic operations at average travel speeds. Vehicles are completely unimpeded in their ability to maneuver within the traffic stream, and delays at intersections are minimal.~~

- ~~LOS B - Represents reasonably stable, unimpeded traffic flow at average travel speeds. The ability to maneuver within the traffic stream is only slightly restricted and stopped delays are not bothersome.~~

- ~~LOS C - Traffic flow is stable but drivers are becoming restricted in their choice of speeds and ability to maneuver. This service level is often selected as being an appropriate criterion for roadway design purposes.~~

- ~~LOS D - Most motorists would consider this LOS unsatisfactory, as traffic flow is unstable. Driving speeds are tolerable for short periods but are subject to sudden variance. Time delays occur due to high volumes of traffic. The ability to maneuver and choose speed is severely restricted.~~

- ~~LOS E - Traffic flow is unstable as speeds and flow rates vary. Traffic flow has either stopped or is maintained at a low speed. There is little independence in selection of speeds or ability to maneuver. Driving comfort is low and accident potential is high due to limited space between vehicles and rapidly changing speeds. The roadway may act as a storage area resulting from downstream congestion. Generally, a facility at LOS E is operating at or above capacity.~~

- ~~LOS F - Traffic flow has generally come to a stopped condition, but will have slight inconsistent movement. No independence in selection of speeds or ability to maneuver exists at this level of service. Driving comfort is low and accident potential is high due to limited space between vehicles and rapidly changing speeds. The roadway is congested. Generally, a facility at LOS F is operating above capacity.~~

~~**Bicycle Level of Service.** Bicycle level of service measurements were performed by the Miami-Dade County MPO to assign a level of service, A through F, to all arterial and collector streets within Miami-Dade County, including the City of Doral. Level of service was calculated based on six factors including recorded traffic volumes, percent heavy vehicles, posted speed limit, pavement width and number of travel lanes, pavement condition, and presence of shoulder or bicycle lane. Each of these variables was weighted by coefficients derived by stepwise regression modeling importance. A numerical score, generally between 0.5 and 6.5, was determined using a regression equation and stratified to a level of service grade. The range of scores corresponding to the six levels of service for bicyclists is described in *Table 2-1*.~~

~~Table 2-1~~
~~Bicycle Level of Service Classifications~~

~~Level of Service~~	~~Range of Scores~~
~~A~~	~~< 1.5~~
~~B~~	~~> 1.5 and < 2.5~~
~~C~~	~~> 2.5 and < 3.5~~
~~D~~	~~> 3.5 and < 4.5~~
~~E~~	~~> 4.5 and < 5.5~~
~~F~~	~~> 5.5~~

~~Source: 2002 FDOT Quality/Level of Service Manual~~

~~Pedestrian Level of Service.~~ ~~Miami-Dade MPO assigned a pedestrian level of service, A through F, to all arterial and collector streets within Miami-Dade County, including the City of Doral. Level of service was calculated based on five factors including lateral separation between the vehicle and pedestrians, recorded traffic volumes, posted travel speed, vehicle mix, and frequency of driveways along the road. Each of these variables was weighted by coefficients derived by stepwise regression modeling importance. A numerical score, generally between 0.5 and 6.5, was determined and stratified to a level of service grade. The range of scores corresponding to the six levels of service for pedestrians is described in *Table 2-2.*~~

~~Table 2-2~~
~~Pedestrian Level of Service Classifications~~

~~Level of Service~~	~~Range of Scores~~
~~A~~	~~< 1.5~~
~~B~~	~~> 1.5 and < 2.5~~
~~C~~	~~> 2.5 and < 3.5~~
~~D~~	~~> 3.5 and < 4.5~~
~~E~~	~~> 4.5 and < 5.5~~
~~F~~	~~> 5.5~~

~~Source: 2002 FDOT Quality/Level of Service Manual~~

~~EXISTING TRANSPORTATION DATA REQUIREMENTS~~

~~Existing Transportation Map Series~~

~~The following series of maps represents the existing conditions for the transportation network on a multimodal basis. This includes the roadway system, public transit system and bicycle and pedestrian facilities within the City of Doral.~~

~~**Map 2-1: Major Thoroughfares by Number of Lanes (2006)** identifies each major thoroughfare within the city by the number of through lanes for the facility.~~

~~**Map 2-2: Major Thoroughfares by Functional Classification (2006)** identifies arterial and collector streets and their functional classification for each facility. The functional classification system indicates the role of each thoroughfare in meeting current travel demands, assists in defining land use relationships, and identifies the jurisdiction responsible for maintenance.~~

~~**Map 2-3: Limited Access Facilities, Significant Parking Facilities (2006)** delineates the location of freeways and expressways within the City of Doral. The city is bound by State Road (SR) 836 (Dolphin Expressway) on the south, SR 826 (Palmetto Expressway) on the east, and SR 821 (Florida's Turnpike) on the west. Significant parking facilities were also identified at the Miami International Mall.~~

~~**Map 2-4: Major Trip Generators and Attractors (2006)** identifies the location of the major traffic generators/attractors in the City of Doral. The significant traffic generators are the residential areas in the western region of the city. Among the significant traffic attractors are the Miami International Mall, the Miami International Commerce Center, and the commercial and industrial corridors in the city.~~

~~**Map 2-5: Existing Transit Facilities (2006)** illustrates the public transit service within the City of Doral, which is operated by the Miami-Dade County Transit (MDT) Authority. There are a total of eight MDT routes that serve the city. Bus service is limited to the southern and eastern portions of the city. Corridors served by MDT include NW 53rd Street, NW 36th/NW 41st Street, NW 25th Street, NW 79th Avenue, NW 87th Avenue and portions of NW 97th Avenue and NW 107th Avenue. The Miami International Mall is a major destination served by MDT.~~

~~**Map 2-6: Existing Pedestrian Facilities (2006)** delineates the existing pedestrian facilities within the City of Doral.~~

~~**Map 2-7: Existing Vehicular Levels of Service (LOS) on Major Thoroughfares (2003)** illustrates existing peak hour, peak direction levels of service calculated for major roadways within the City of Doral.~~

~~**Map 2-8: Existing Bicycle Levels of Service (LOS) (2006)** identifies the bicycle level of service calculations conducted by the Miami-Dade County MPO for major roadways within the City of Doral.~~

~~**Map 2-9: Existing Pedestrian Levels of Service (LOS) (2006)** illustrates the pedestrian level of service calculations conducted by the Miami-Dade County MPO for major roadways within the City of Doral.~~

~~**Map 2-10: Freight/Passenger Rail Facilities (2006)** illustrates one rail corridor operated by CSX Railroad within the City of Doral. The rail line runs along the southern border of the city parallel to SR 836 (Dolphin Expressway) and NW 12th Street.~~

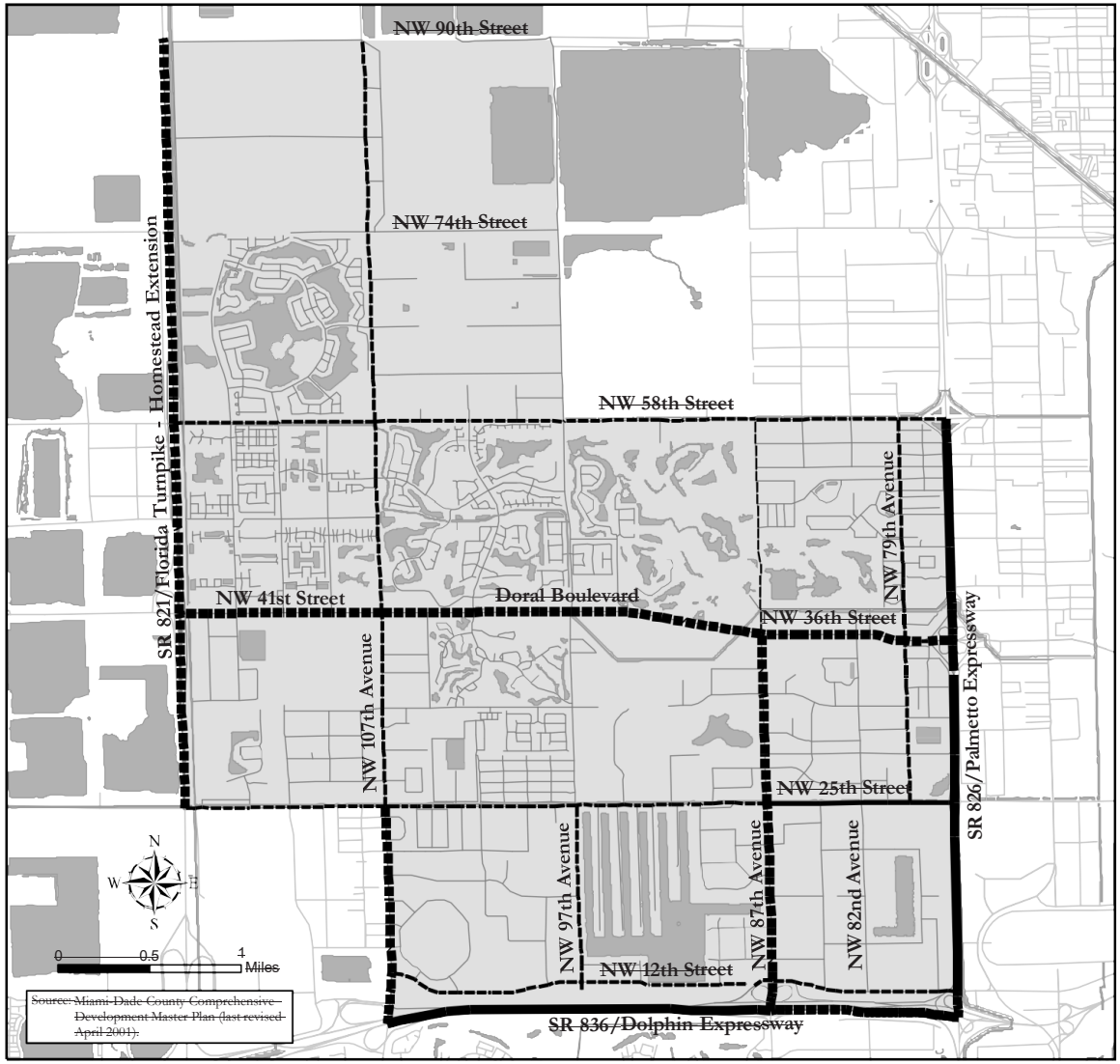
~~**Map 2-11: Hurricane Evacuation Routes (2006)** delineates the county's designated local and regional transportation facilities critical to the evacuation of the coastal population prior to an impending disaster. Major evacuation routes within the City of Doral include SR 836 (Dolphin Expressway), SR 821 (Florida Turnpike), and SR 826 (Palmetto Expressway).~~

~~**Map 2-12: Airport Clear Zones (2006)** delineates the Miami International Airport (MIA) runway clear zones in relation to the Doral city limits.~~

~~**Existing Bicycle Facilities** - There are no bicycle paths or bicycle lanes currently designated within the City of Doral. Therefore, no associated map illustrating the existing bicycle facilities is presented in the City's comprehensive plan.~~

~~**Airport and Port Facilities** - The City of Doral does not have any airport or seaport facilities within its municipal boundaries; therefore no associated data, analysis or maps regarding these facilities are presented in the City's comprehensive plan. However, airport service is provided nearby at the Miami International Airport, which is adjacent to Doral, east of SR 826 (Palmetto Expressway).~~

~~***Map 2-1*: Major Thoroughfares by Number of Lanes (2006)**~~



CITY OF DORAL

Existing Major Thoroughfares Number of Lanes (2006)

Map II-1

Legend

- 2 Lanes
- 4 Lanes
- 5 Lanes
- 6 Lanes
- 8 Lanes
- Doral City Limit
- Water Bodies

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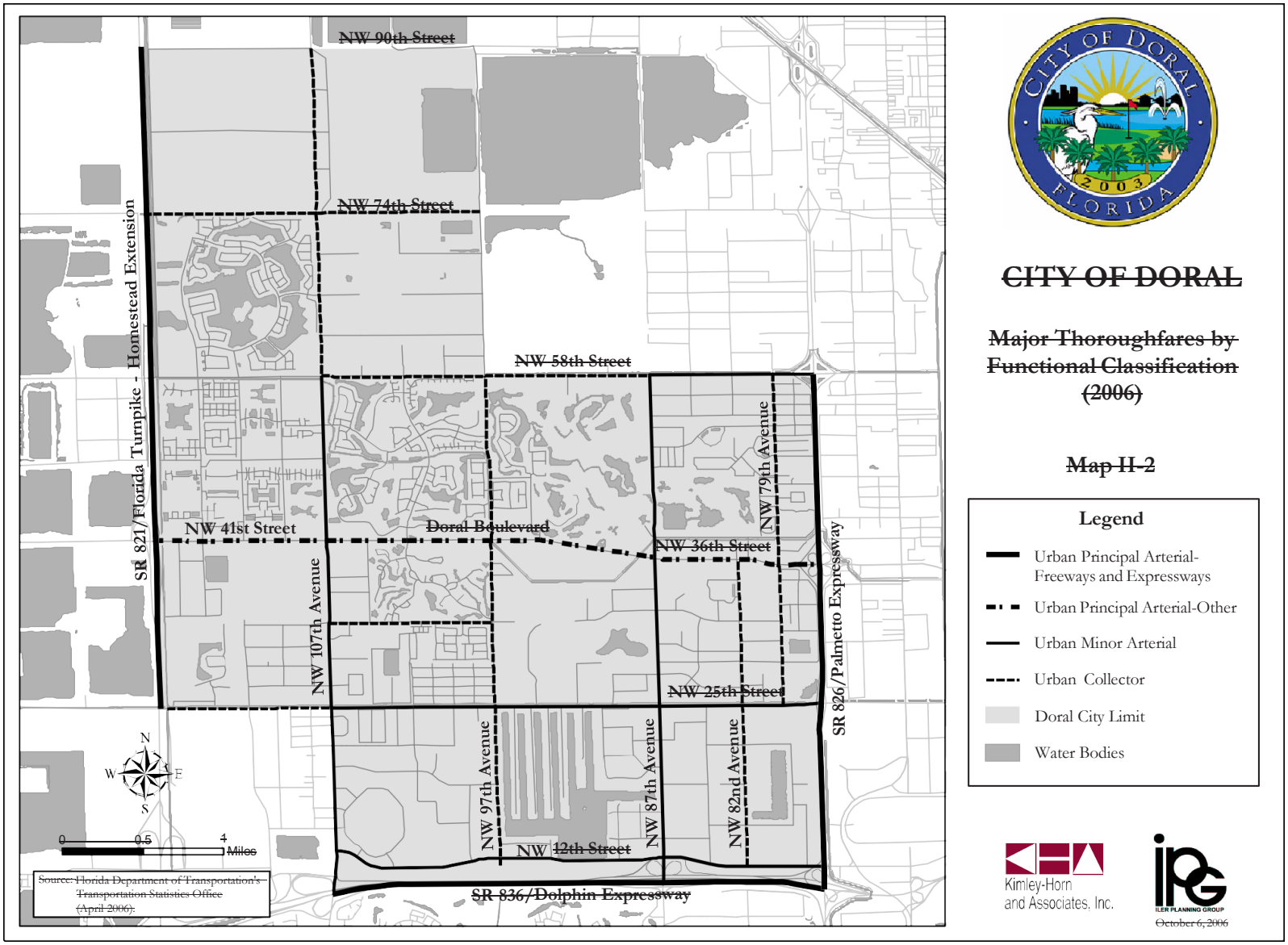
~~***Map 2-2*: Major Thoroughfares by Functional Classification (2006)**~~


NW 90th Street
NW 74th Street
NW 58th Street
NW 41st Street
Doral Boulevard
NW 36th Street
NW 25th Street
NW 12th Street
SR 836/Dolphin Expressway
SR 821/Florida Turnpike - Homestead Extension
NW 107th Avenue
NW 97th Avenue
NW 87th Avenue
NW 82nd Avenue
NW 79th Avenue
SR 826/Palmetto Expressway
N
W
E
S
0
0.5
4
Miles
Source: Florida Department of Transportation's Transportation Statistics Office (April 2006).
CITY OF DORAL
FLORIDA
2003
CITY OF DORAL
Major Thoroughfares by Functional Classification (2006)
Map II-2
Legend
Urban Principal Arterial-Freeways and Expressways
Urban Principal Arterial-Other
Urban Minor Arterial
Urban Collector
Doral City Limit
Water Bodies
Kimley-Horn and Associates, Inc.
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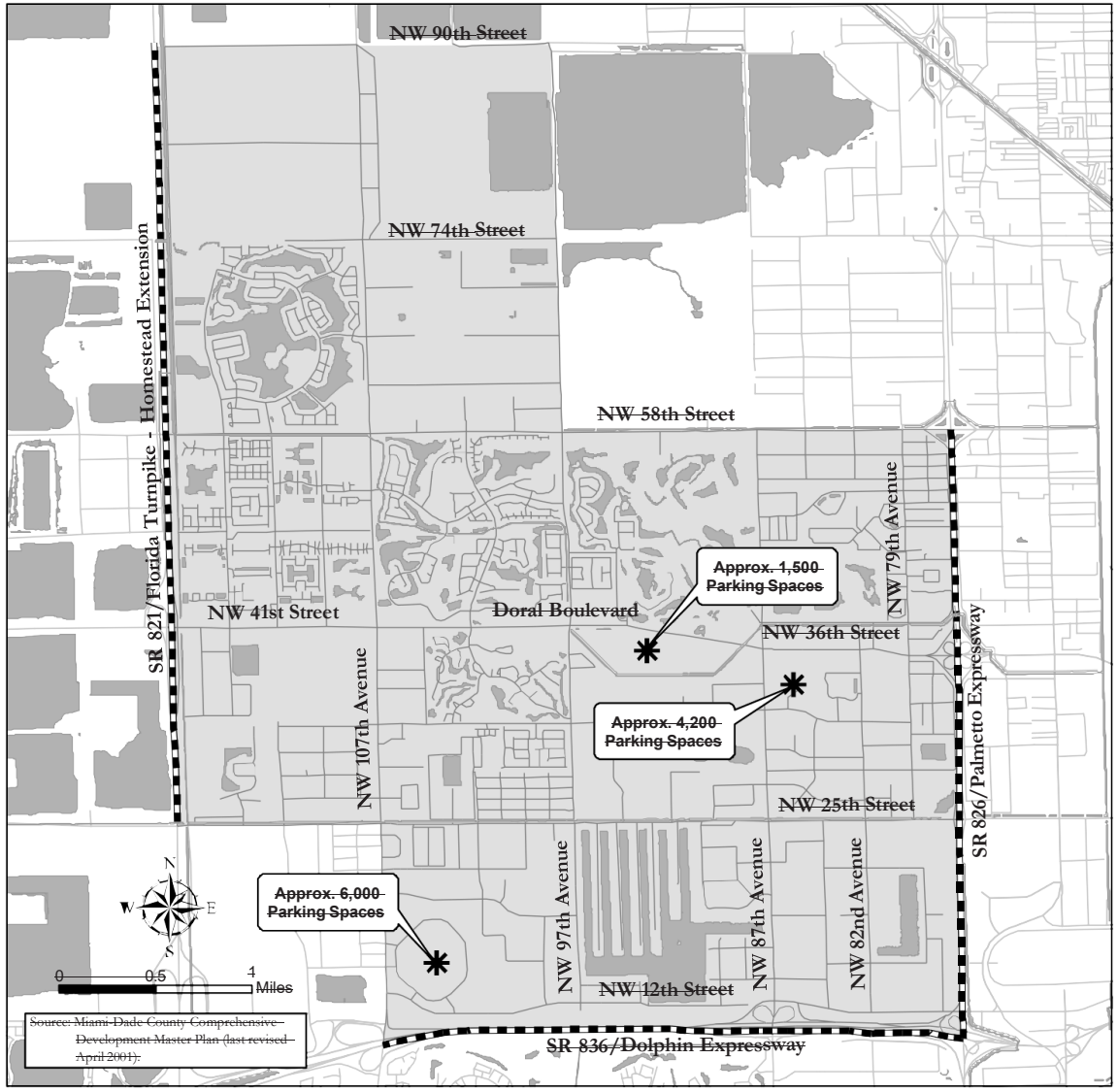
October 6, 2006

~~***Map 2-3*: Limited Access Facilities, Significant Parking Facilities (2006)**~~



CITY OF DORAL

Limited Access and Significant Parking Facilities (2006)

Map II-3

Legend

- Limited Access Facility
- Significant Parking Facility
- Doral City Limit
- Water Bodies

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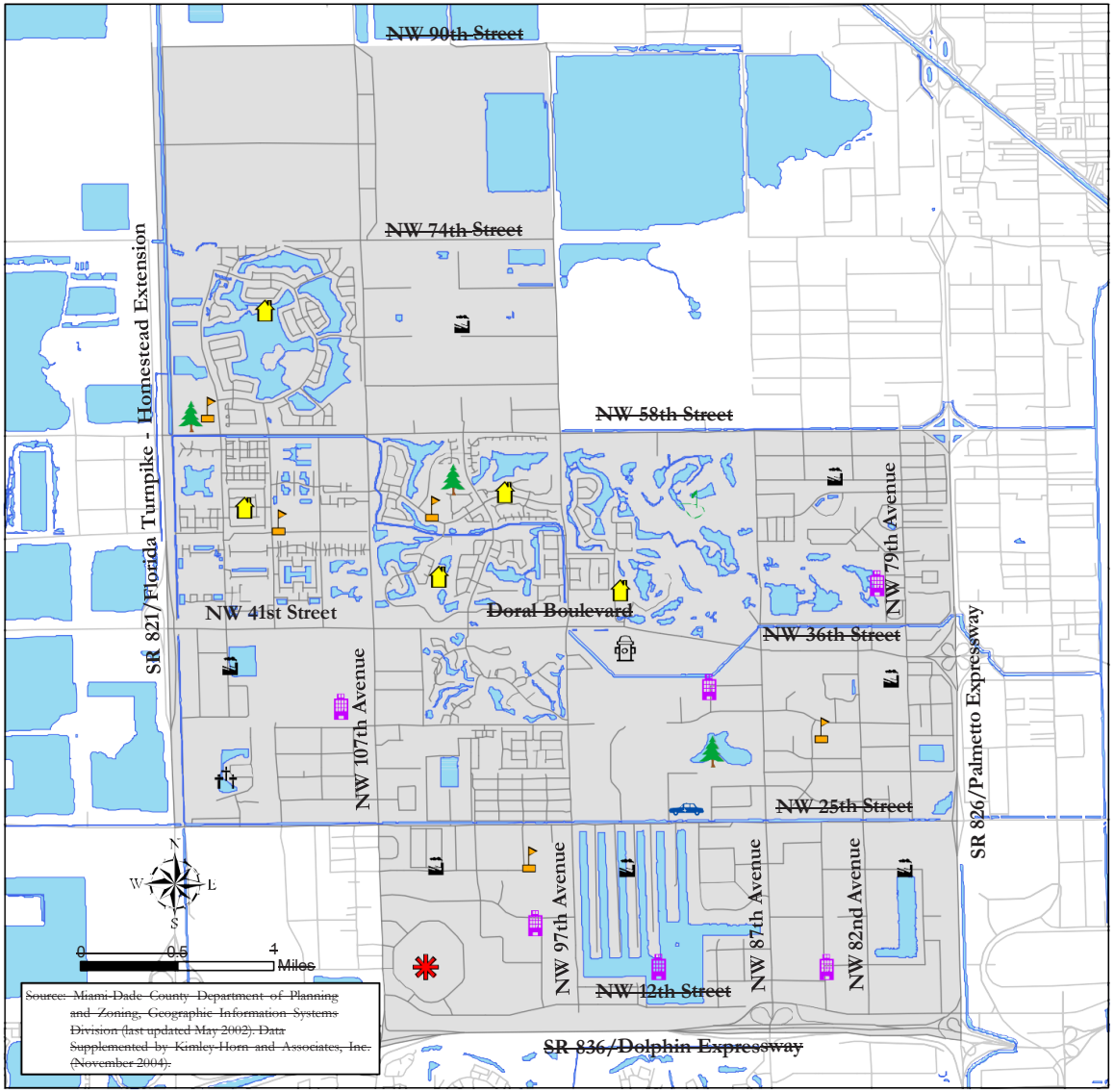
~~***Map 2-4*: Major Trip Generators and Attractors (2006)**~~



Source: Miami-Dade County Department of Planning and Zoning, Geographic Information Systems Division (last updated May 2002). Data Supplemented by Kimley-Horn and Associates, Inc. (November 2004).

CITY OF DORAL

Major Trip Generators and Attractors (2006)

Map II-4

Legend

- Miami-Dade County Police Headquarters
- Miami-Dade County Fire Rescue Headquarters
- Employment Center
- Industrial
- Doral Resort and Spa
- Our Lady of Mercy Catholic Cemetry and Mausoleum
- Parks
- School
- Shopping Center
- Residential
- Doral City Limit
- Water Bodies

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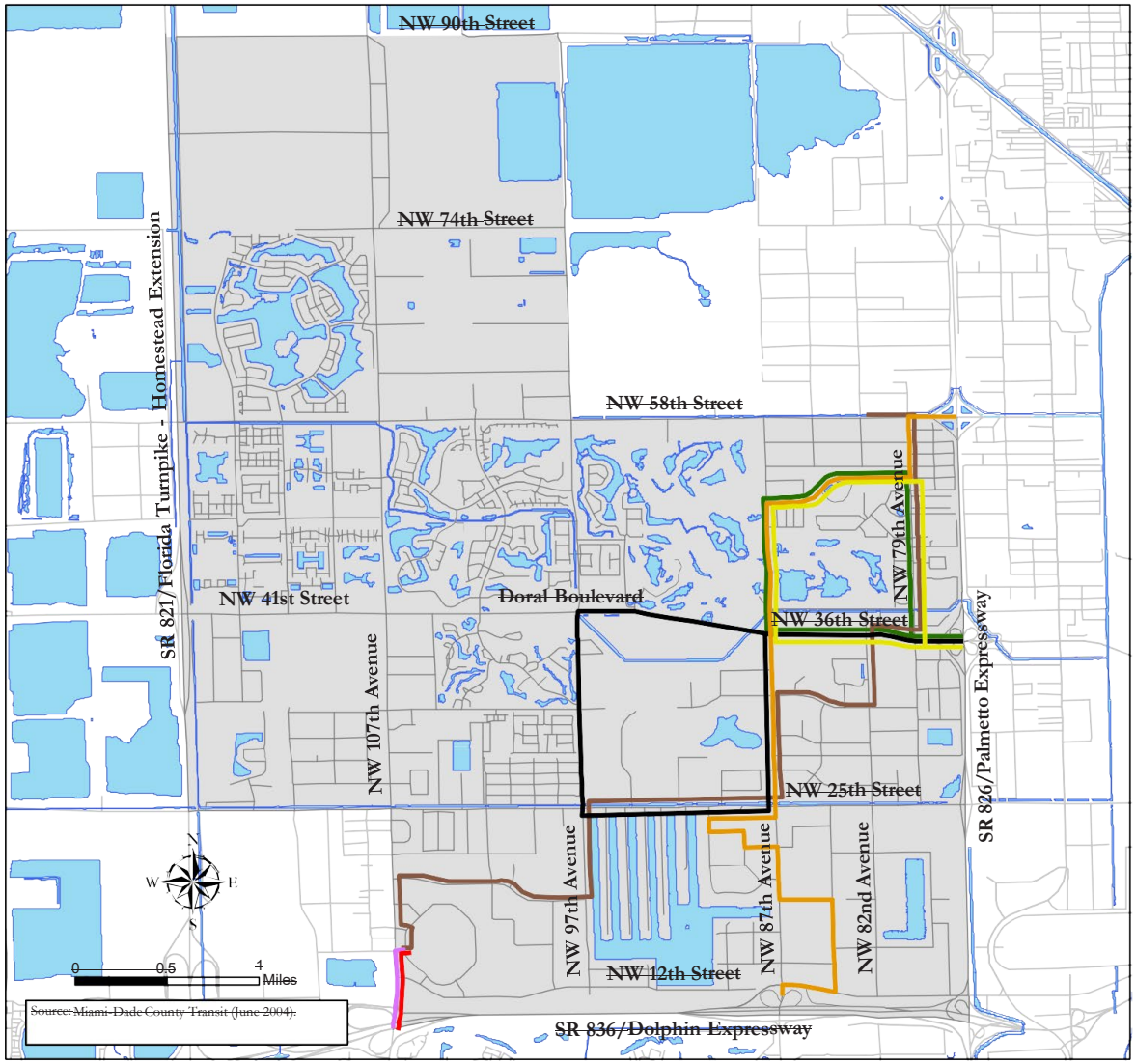
~~***Map 2-5*: Existing Transit Facilities (2006)**~~



CITY OF DORAL

Existing Transit Facilities (2006)

Map II-5

Legend

- Route 7
- Route 36
- Route 71
- Route 87
- Route 95
- Route 238 (East-West Connection)
- Route 242 (Doral Connection)
- Route 132 Koger/Tri-Rail Shuttle
- Doral City Limit
- Water Bodies

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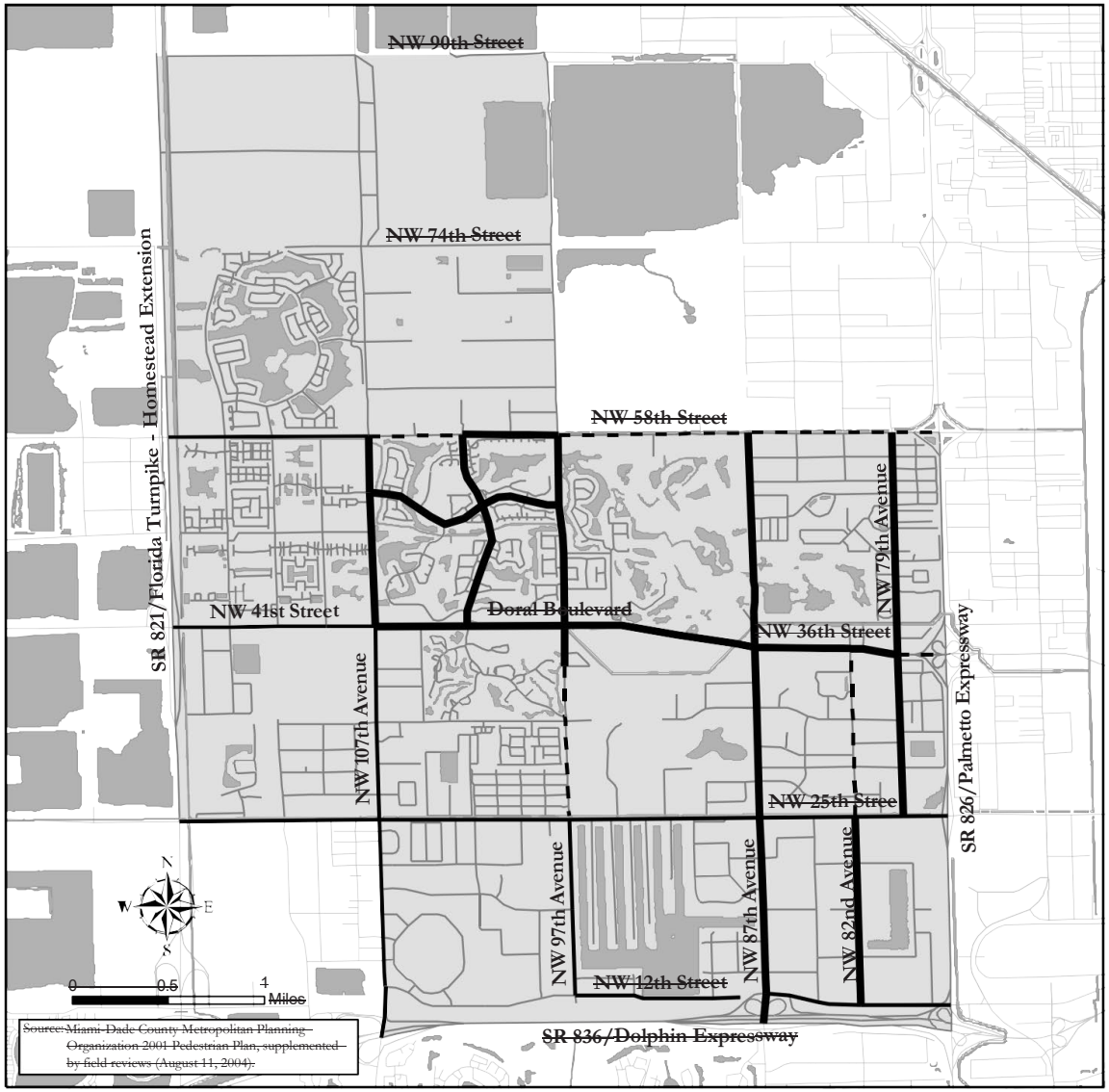
~~***Map 2-6*: Existing Pedestrian Facilities (2006)**~~



Source: Miami-Dade County Metropolitan Planning Organization 2001 Pedestrian Plan, supplemented by field reviews (August 11, 2004).

CITY OF DORAL

Major Thoroughfares Existing Pedestrian Facilities (2006)

Map II-6

Legend

- Sidewalk (One Side)
- Sidewalk (Both Sides)
- No Sidewalks
- Doral City Limit
- Water Bodies

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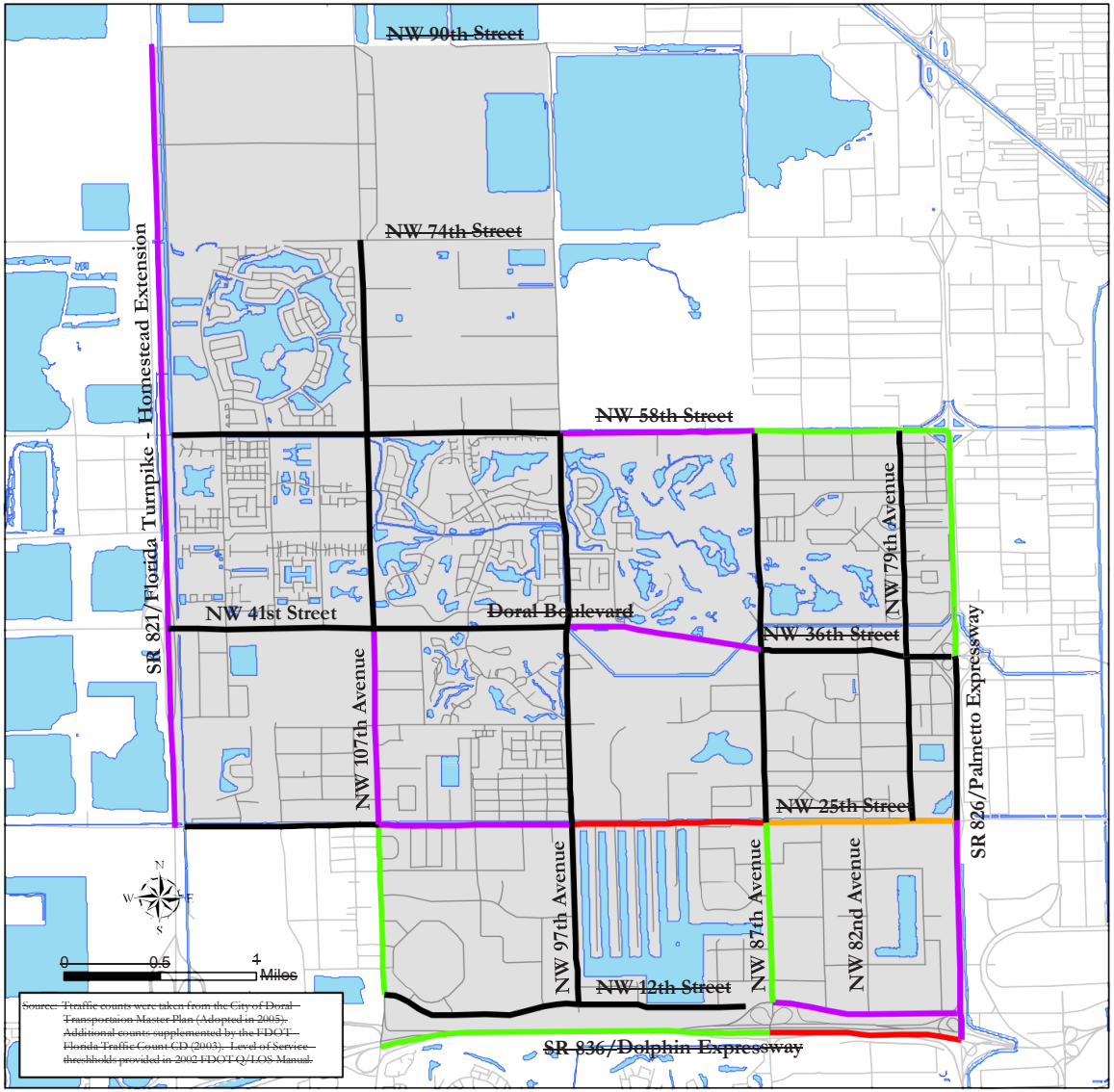
~~***Map 2-7*: Existing Vehicular Levels of Service (LOS) on Major Thoroughfares (2006)**~~



Source: Traffic counts were taken from the City of Doral Transportation Master Plan (Adopted in 2005). Additional counts supplemented by the FDOT Florida Traffic Count CD (2003). Level of Service thresholds provided in 2002 FDOT Q/LOS Manual.

CITY OF DORAL

Major Thoroughfares Peak Hour/Peak Direction Vehicular Level of Service (2006)

Map II-7

Legend

- LOS "B" or Better
- LOS "C"
- LOS "D"
- LOS "E"
- LOS "F"
- Doral City Limit
- Water Bodies

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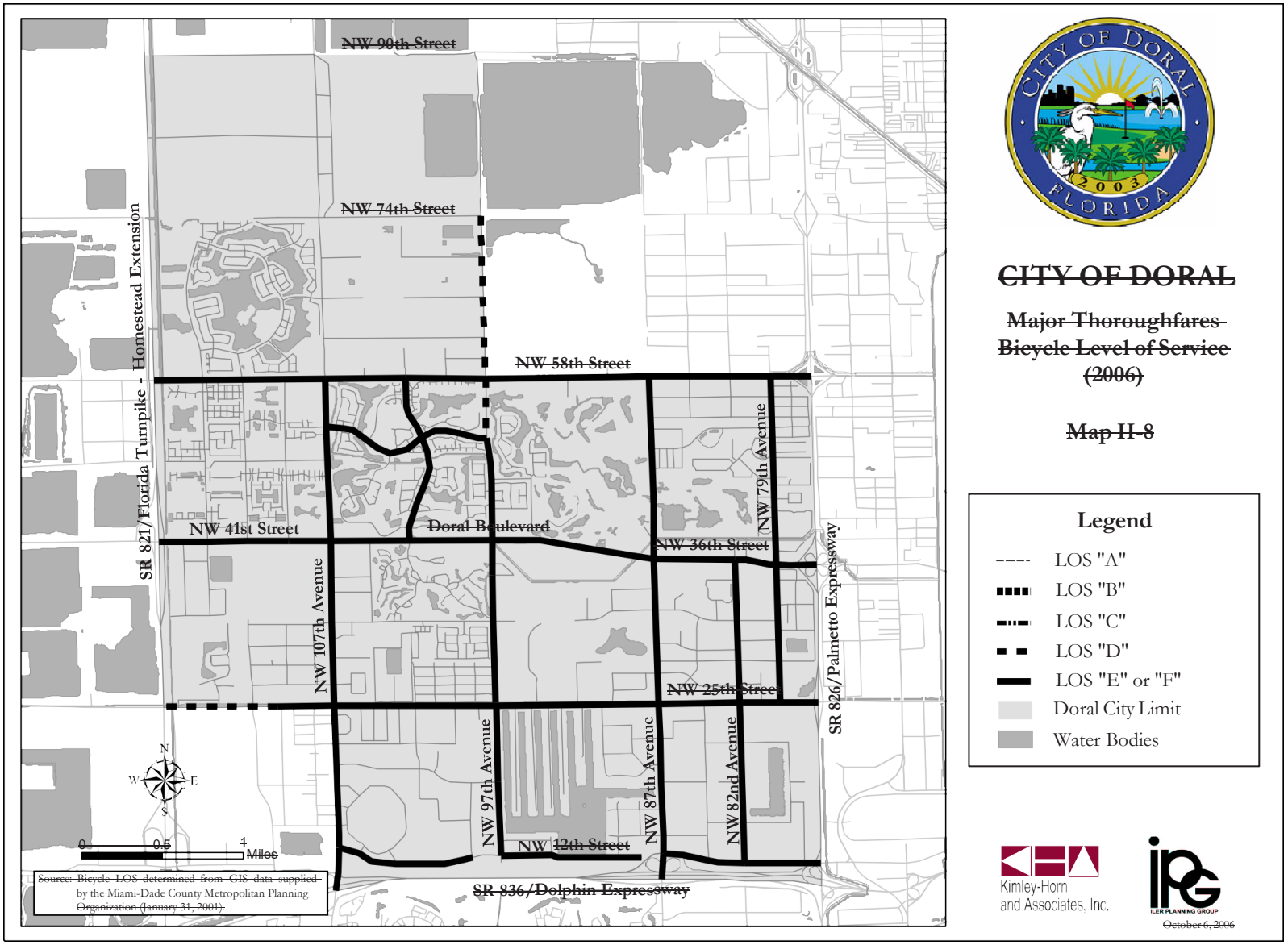
October 6, 2006

~~***Map 2-8*: Existing Bicycle Levels of Service (LOS) (2006)**~~


NW 90th Street
NW 74th Street
NW 58th Street
NW 41st Street
Doral Boulevard
NW 36th Street
NW 25th Street
NW 12th Street
SR 836/Dolphin Expressway
SR 821/Florida Turnpike - Homestead Extension
NW 107th Avenue
NW 97th Avenue
NW 87th Avenue
NW 82nd Avenue
NW 79th Avenue
SR 826/Palmetto Expressway
N
W
E
S
0
0.5
4
Miles
Source: Bicycle LOS determined from GIS data supplied by the Miami-Dade County Metropolitan Planning Organization (January 31, 2001).
CITY OF DORAL
FLORIDA
2003
CITY OF DORAL
Major Thoroughfares Bicycle Level of Service (2006)
Map II-8
Legend
LOS "A"
LOS "B"
LOS "C"
LOS "D"
LOS "E" or "F"
Doral City Limit
Water Bodies
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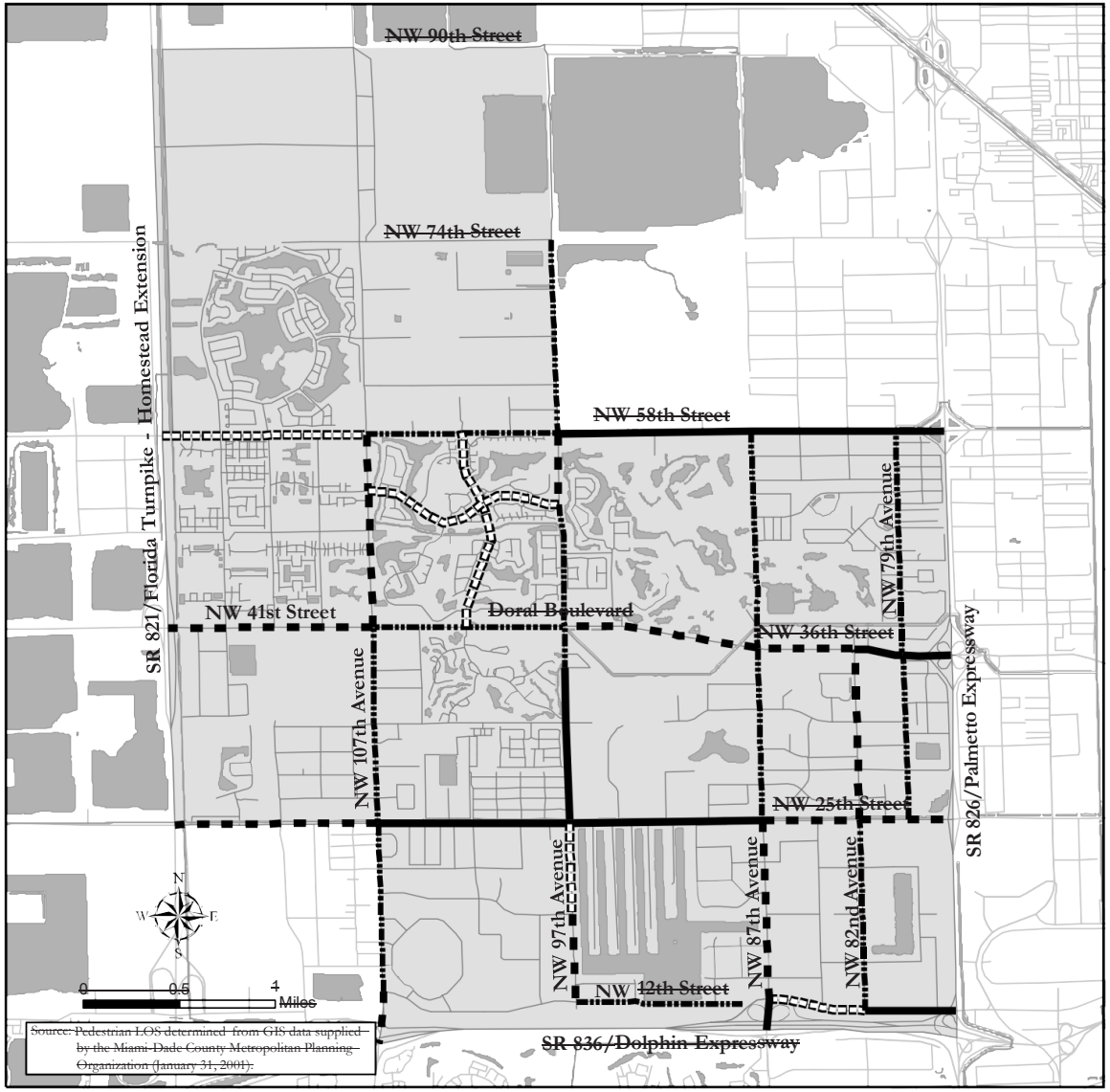
October 6, 2006

~~***Map 2-9*: Existing Pedestrian Levels of Service (LOS) (2006)**~~



Source: Pedestrian LOS determined from GIS data supplied by the Miami-Dade County Metropolitan Planning Organization (January 31, 2001).

CITY OF DORAL

Major Thoroughfares Pedestrian Level of Service (2006)

Map II-9

Legend

- LOS "A"
- LOS "B"
- LOS "C"
- LOS "D"
- LOS "E"
- LOS "F"
- Doral City Limit
- Water Bodies

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~~***Map 2-10*: Freight/Passenger Rail Facilities (2006)**~~

CITY OF DORAL

Freight & Passenger Rail Facilities (2006)

Map II-10

Legend

- CSX Railroad
- Doral City Limit
- Water Bodies

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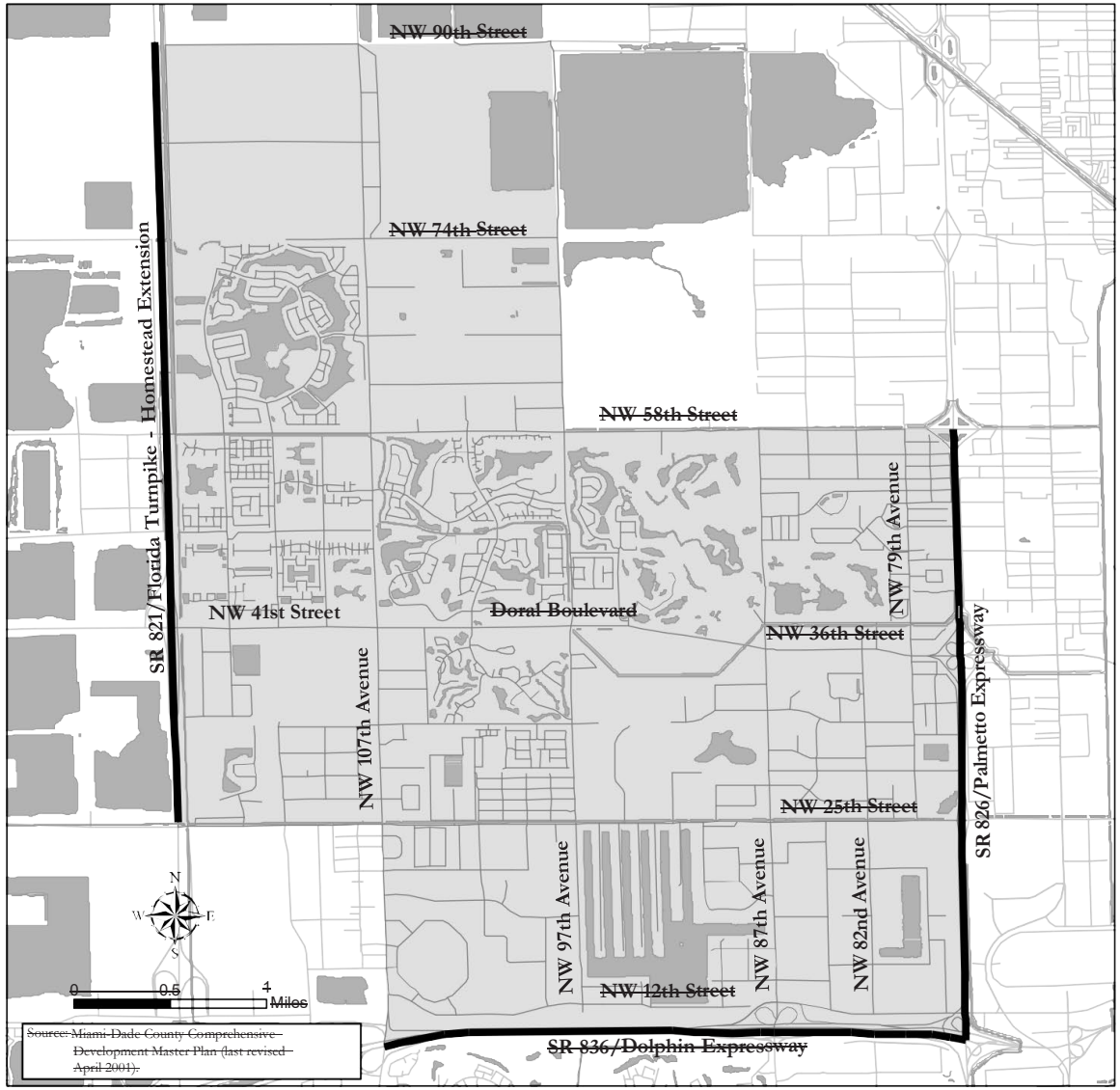
~~***Map 2-11*: Hurricane Evacuation Routes (2006)**~~



Source: Miami-Dade County Comprehensive Development Master Plan (last revised April 2001).

CITY OF DORAL

Evacuation Routes (2006)

Map II-11

Legend

- Evacuation Routes
- Doral City Limit
- Water Bodies

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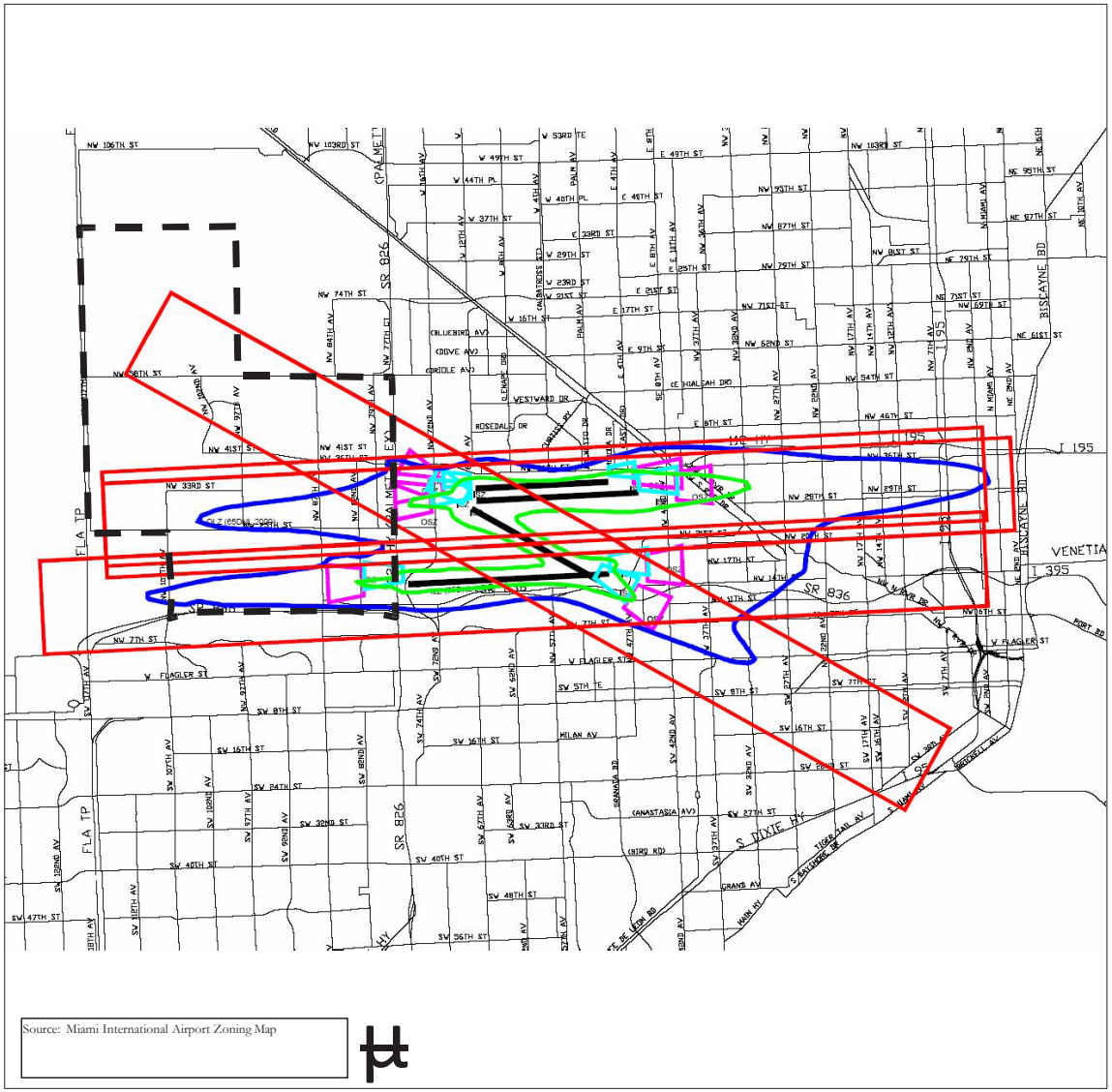
October 6, 2006

~~***Map 2-12*: Airport Clear Zones (2006)**~~



Source: Miami International Airport Zoning Map

~~CITY OF DORAL~~

~~Airport Clear Zones (2006)~~

~~Map II-12~~

Legend

- Inner Safety Zone (ISZ)
- Outer Safety Zone (OSZ)
- Inner Land Use Zone (ILZ)
- Outer Land Use Zone (OLZ)
- Critical Area Approach Zone (CAA)
- Doral City Limit

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~~April 26, 2006~~

~~**Analysis of Existing Transportation Systems.** The Transportation Element for the City of Doral has been coordinated with the resources provided by the Miami-Dade MPO and Miami-Dade County. These resources have been used for information that addresses countywide growth trends, travel patterns, and countywide land use and transportation alternatives. The City of Doral also coordinated with the MPO and Miami-Dade County in considering issues such as: (1) existing and projected multimodal deficiencies and needs; (2) analysis of the transportation system levels of service and system needs based upon the future land use categories; and (3) analysis of how Doral will maintain adopted levels of service standards for roads and work with Miami-Dade Transit to maintain the LOS standard for transit facilities.~~

~~**Average Peak Hour/Peak Direction Vehicle Trips.** *Table 2-3* presents peak hour/peak direction trip volumes and level of service grades for major thoroughfares within the City of Doral.~~

~~**Level of Service Calculation Methodology.** Level of service for major thoroughfares within the City of Doral was measured using volume to capacity (v/c) ratios for major roadways defined in the Miami-Dade Transportation Plan to the Year 2030. The most recent annual average daily counts were obtained from the Transportation Master Plan (TMP) of the City of Doral that was adopted in December 2005. As a part of TMP process, the City had conducted three day 24-hour counts on all major roadways within the City. These counts were converted into peak hour peak direction traffic volumes by using the peak hour (K) factor and the directional (D) factor factors adopted by the Florida Department of Transportation (FDOT). For the expressways, traffic counts were obtained from the 2005 FDOT traffic counts. Roadway capacities for the LOS calculations were obtained from the FDOT 2002 Quality/Level of Service Handbook (Table 4-7). This methodology is generally accepted as a first-cut approach. Based on this analysis, the LOS measurements for each roadway reported in *Table 2-3* were determined.~~

~~**Levels of Service and System Needs Based Upon Existing Design and Operating Capacity.** The Metro-Miami-Dade Service Concurrency Management Program establishes adopted level of service standards for evaluating state and county roads. The City of Doral lies entirely within the County's designated Urban Development Boundary (UDB), and recognizes their level of service standards established for the UDB to evaluate transportation impacts from proposed development within city limits.~~

~~All major roadways within this area must operate at LOS D (90 percent of capacity), except state urban minor arterials (SUMA), which may operate at LOS E (100 percent of capacity). Where public transit service exists in the UDB, operating with headways of 20 minutes or less, roadways located less than one-half mile of the service may operate at LOS E (100 percent of capacity). Furthermore, on roadways parallel to exceptional transit service (i.e. commuter rail/express bus) the acceptable level of service is LOS E+20 (120 percent of capacity). Based on these parameters, all major roadways located within the City of Doral have an adopted level of service of LOS D, with the exception of NW 87th Avenue and portions of NW 79th Avenue and NW 41st Street/NW 36th Street that have an adopted level of service of LOS E based on existing regional transit service in the area.~~

~~Table 2-3~~
~~Existing Vehicular Levels of Service~~

~~Roadway Segment~~	~~Adopted LOS[1]~~	~~Functional Classification (used for capacity determination per FDOT LOS Handbook)~~	~~Number of Lanes~~	~~Peak Hour/ Peak Direction Capacity[2]~~	~~2005 Volume (Peak Hour/ Peak Direction)~~	~~V/C Ratio[5]~~	~~Current LOS~~
~~SR 836 (Dolphin Expressway)~~							
~~107th Ave. to 87th Ave.~~	~~D~~	~~Freeway (Int. Spacing < 2 mi.)~~	~~8L-D~~	~~8,380~~	~~6,259~~	~~0.75~~	~~C~~
~~87th Ave. to SR 826~~	~~D~~	~~Freeway (Int. Spacing < 2 mi.)~~	~~6L-D~~	~~6,150~~	~~7,736~~	~~1.26~~	~~F~~
~~SR 826 (Palmetto Expressway)~~							
~~SR 836 to NW 25St.~~	~~D~~	~~Freeway (Int. Spacing < 2 mi.)~~	~~8L-D~~	~~8,380~~	~~7,308~~	~~0.87~~	~~D~~
~~NW 25St. to NW 41St./ 36th St.~~	~~D~~	~~Freeway (Int. Spacing < 2 mi.)~~	~~8L-D~~	~~8,380~~	~~5,597~~	~~0.67~~	~~B or Better~~
~~NW 41st St./ 36th St. to NW 58th St.~~	~~D~~	~~Freeway (Int. Spacing < 2 mi.)~~	~~8L-D~~	~~8,380~~	~~6,256~~	~~0.75~~	~~C~~
~~SR 821 (Florida's Turnpike/)~~							
~~SR 836 to NW 41st St/ 36th St~~	~~D~~	~~Freeway (Int. Spacing > or = 2 mi.)~~	~~6L-D~~	~~6,150~~	~~5,295~~	~~0.86~~	~~D~~
~~NW 41st St/ 36th St to NW 74th St~~	~~D~~	~~Freeway (Int. Spacing > or = 2 mi.)~~	~~6L-D~~	~~6,150~~	~~5,055~~	~~0.82~~	~~D~~
~~North of NW 74th St~~	~~D~~	~~Freeway (Int. Spacing > or = 2 mi.)~~	~~6L-D~~	~~6,150~~	~~5,055~~	~~0.82~~	~~D~~
~~NW 58th Street~~							
~~NW 117th Ave. to NW 107th Ave.~~	~~D~~	~~State Two-Way Arterial Class I~~	~~4L~~	~~1,767~~	~~570~~	~~0.32~~	~~B or Better~~
~~NW 107th Ave. to NW 97th Ave.~~	~~D~~	~~State Two-Way Arterial Class I~~	~~4L~~	~~1,767~~	~~789~~	~~0.45~~	~~B or Better~~
~~NW 97th Ave. to NW 87th Ave.~~	~~D~~	~~State Two-Way Arterial Class I~~	~~4L~~	~~1,767~~	~~1,534~~	~~0.87~~	~~D~~
~~NW 87th Ave. to SR 826~~	~~D~~	~~State Two-Way Arterial Class I~~	~~4L~~	~~1,767~~	~~1,402~~	~~0.79~~	~~C~~
~~NW 41st Street/ NW 36th Street~~							
~~Heft to NW 107th Ave.~~	~~D~~	~~State Two-Way Arterial Class I~~	~~6L~~	~~2,790~~	~~1,840~~	~~0.66~~	~~B or Better~~
~~NW 107th Ave. to NW 97th Ave.~~	~~D~~	~~State Two-Way Arterial Class I~~	~~6L~~	~~2,790~~	~~1,928~~	~~0.69~~	~~B or Better~~
~~NW 97th Ave. to NW 87th Ave.~~	~~D~~	~~State Two-Way Arterial Class I~~	~~6L~~	~~2,790~~	~~2,366~~	~~0.85~~	~~D~~
~~NW 87th Ave. to SR 826~~	~~E[2]~~	~~State Two-Way Arterial Class I~~	~~6L~~	~~2,790~~	~~1,709~~	~~0.61~~	~~B or Better~~
~~NW 25th Street~~							
~~NW 117th Ave. to NW 107th Ave.~~	~~D~~	~~State Two-Way Arterial Class II~~	~~4L~~	~~1,800~~	~~701~~	~~0.39~~	~~B or Better~~
~~NW 107th Ave. to NW 97th Ave.~~	~~D~~	~~State Two-Way Arterial Class II~~	~~4L~~	~~1,800~~	~~1,534~~	~~0.85~~	~~D~~
~~NW 97th Ave. to NW 87th Ave.~~	~~D~~	~~State Two-Way Arterial Class II~~	~~4L~~	~~1,800~~	~~2,279~~	~~1.27~~	~~F~~
~~NW 87th Ave. to SR 826~~	~~D~~	~~State Two-Way Arterial Class II~~	~~5L~~	~~2,150~~	~~2,016~~	~~0.94~~	~~E~~
~~NW 12th Street~~							
~~NW 107th Ave. to NW 97th Ave.~~	~~D~~	~~State Two-Way Arterial Class II~~	~~4L~~	~~1,800~~	~~1,052~~	~~0.58~~	~~B or Better~~
~~NW 97th Ave. to NW 87nd Ave.~~	~~D~~	~~State Two-Way Arterial Class II~~	~~4L~~	~~1,800~~	~~1,139~~	~~0.63~~	~~B or Better~~
~~NW 87th Ave. to SR 826~~	~~D~~	~~State Two-Way Arterial Class II~~	~~4L~~	~~1,800~~	~~1,578~~	~~0.88~~	~~D~~
~~NW 107th Ave~~							
~~NW 12th St. to NW 25th St.~~	~~D~~	~~State Two-Way Arterial Class II~~	~~6L~~	~~2,710~~	~~2,103~~	~~0.78~~	~~C~~
~~NW 25th St. to NW 41st St.~~	~~D~~	~~State Two-Way Arterial Class II~~	~~4L~~	~~1,800~~	~~1,621~~	~~0.90~~	~~D~~
~~NW 41st St. to NW 58th St.~~	~~D~~	~~State Two-Way Arterial Class II~~	~~4L~~	~~1,800~~	~~1,096~~	~~0.61~~	~~B or Better~~
~~NW 58th St. to NW 74th St.~~	~~D~~	~~State Two-Way Arterial Class II~~	~~4L~~	~~1,800~~	~~570~~	~~0.32~~	~~B or Better~~
~~NW 97th Ave~~							
~~NW 12th St. to NW 25th St.~~	~~D~~	~~Non-Sate Roadway~~	~~4L~~	~~1,634~~	~~613~~	~~0.38~~	~~B or Better~~
~~NW 25th St. to NW 41st St.~~	~~D~~	~~Non-Sate Roadway~~	~~4L~~	~~1,634~~	~~657~~	~~0.40~~	~~B or Better~~
~~NW 41st St. to NW 58th St.~~	~~D~~	~~Non-Sate Roadway~~	~~4L~~	~~1,634~~	~~745~~	~~0.46~~	~~B or Better~~
~~NW 87th Ave~~							
~~NW 12th St. to NW 25th St.~~	~~E[4]~~	~~State Two-Way Arterial Class II~~	~~6L~~	~~2,710~~	~~2,016~~	~~0.74~~	~~C~~
~~NW 25th St. to NW 41st St/36th St.~~	~~E[4]~~	~~State Two-Way Arterial Class II~~	~~6L~~	~~2,710~~	~~1,665~~	~~0.61~~	~~B or Better~~
~~NW 41st St./36th St. to NW 58th St.~~	~~E[4]~~	~~State Two-Way Arterial Class II~~	~~4L~~	~~1,800~~	~~1,096~~	~~0.61~~	~~B or Better~~
~~NW 79th Ave~~							
~~NW 25th St. to NW 41st St/36th St.~~	~~D~~	~~Non-Sate Roadway~~	~~4L~~	~~1,634~~	~~657~~	~~0.40~~	~~B or Better~~
~~NW 41st St./36th St. to NW 58th St.~~	~~E[2]~~	~~Non-Sate Roadway~~	~~4L~~	~~1,634~~	~~613~~	~~0.38~~	~~B or Better~~

~~Source:~~
~~1. Miami-Dade County Comprehensive Development Master Plan.~~
~~2. FDOT 2002 Quality/Level of Service Handbook Table 4-7.~~
~~3. Corridors that have transit service with less than 20-minute headways have an adopted LOS of E.~~
~~4. State Urban Minor Arterials have an adopted LOS of E.~~
~~5. V/C ratio categories to determine current LOS were obtained from Miami-Dade County.~~

~~According to *Table 2-3* the majority of roadways within Doral are operating at or above the adopted level of service with the exception of the following roadway segments:~~

- ~~SR 836 from NW 87th Avenue to SR 826~~
- ~~NW 25th Street from NW 97th Avenue to NW 87th Avenue; and~~
- ~~NW 25th Street from NW 87th Avenue to SR 826.~~

~~**Existing Modal Split and Vehicle Occupancy Rates.** According to journey-to-work data collected in the 2000 census, single occupant automobile trips account for approximately 80.0 percent of all trips to and from work reported by residents in Doral. Carpools account for approximately 13.2 percent, public transit for approximately 0.8 percent, bicycles for approximately 0.1 percent, and walking for approximately 1.9 percent. In addition, approximately 4.0 percent of Doral residents reported working at home. The information reported in the 2000 Census is consistent with results from the Southeast Florida Regional Travel Characteristics Study. In this study, the average vehicle occupancy for Miami-Dade County was reported to be 1.34 persons per vehicle.~~

~~**Existing Public Transit Facilities and Routes.** Eight Miami-Dade Transit (MDT) bus routes serve the City of Doral, including Routes 7, 36, 71, 87, 95, 132, 238, and 242. The routes directly serving the City of Doral are illustrated in *Map 2-5* and are described below:~~

- ~~**Route 7** serves only a very minor portion of the city. It runs north along NW 107th Avenue and serves the Miami International Mall. Route 7 runs from 5:30 a.m. to 10:30 p.m. on the weekdays with 20-40 minute headways. On the weekends it runs from 6:30 a.m. to 10:00 p.m. with 20-40 minute headways on Saturdays and 30-60 minute headways on Sundays. Ridership from Miami-Dade County indicates an annual ridership of 15,618 in 2005.~~

- ~~**Route 36** offers service to the Koger Office Park within the City of Doral. It enters the city via NW 36th Street/41st Street and runs north on NW 79th Avenue, stops at the Koger Office Park on NW 53rd Street and returns to NW 36th Street via NW 87th Avenue to exit the city. It operates seven days a week. Weekday service is from 5:00 a.m. to 10:00 p.m. with varying 10 to 60-minute headways. Saturday service is from 6:00 a.m. to 8:30 p.m. and Sunday service is from 6:30 a.m. to 8:30 p.m., both with 30 to 60-minute headways. Ridership from Miami-Dade County indicates an annual ridership of 128,188 in 2005.~~

- ~~**Route 71** also runs along NW 107th Avenue and serves the Miami International Mall. Weekday service begins at 6:00 a.m. and ends at 8:30 p.m. with 30-minute headways. On Saturdays, service begins at 7:20 a.m. and ends at 6:10 p.m. with 25-minute headways. Sunday service is from 9:45 a.m. to 6:15 p.m. with 30-minute headways. Ridership from Miami-Dade County indicates an annual ridership of 15,496 in 2005.~~

- ~~**Route 87** offers north-south service through the City of Doral along NW 87th Avenue and serves the Miami-Dade Police Department on NW 25th Street. It runs along some portions of NW 17th Street, NW 23rd Street, NW 53rd Street,~~

~~and NW 58th Street within the city, and on NW 74th Street just outside city limits to reach the Okeechobee Metrorail Station. Weekday service runs from 5:45 a.m. to 8:30 p.m. and weekend service from 8:45 a.m. to 7:30 p.m., both with 30-minute headways. Ridership from Miami-Dade County indicates an annual ridership of 95,196 in 2005.~~

- ~~**Route 95x - Earlington Heights** provides rush hour service only. It runs on NW 36th Street/NW 41st Street through the Earlington Heights Metrorail Station, and serves Doral Estates and Eastern Computer Center running along NW 25th Street through NW 97th Avenue to serve the Miami-Dade Police Department. It finally joins back to NW 36th Street through NW 87th Avenue. This route operates on weekdays only from 10:00 a.m. to 9:00 p.m. Ridership from Miami-Dade County indicates an annual ridership of 27,635 in 2005.~~

- ~~**Route 132 - Koger/Tri-Rail Shuttle** starts service from the Hialeah Market Tri-Rail Station. The shuttle offers service to the Koger Executive Center, Doral Country Club, and the Atrium Shopping Center. The shuttle runs from 6:00 a.m. to 7:00 p.m. on the weekdays with 20 to 60-minute headways. Ridership from Miami-Dade County indicates an annual ridership of 4,471 in 2005.~~

- ~~**Route 238 - East-West Connection** enters the City of Doral through NW 25th Street and runs south on NW 107th Street to serve the Miami International Mall and runs west on NW 14th Street to serve the Dolphin Mall. This route operates seven days a week. Weekday service begins at 5:45 a.m. and ends at 9:00 p.m. with 30-minute headways during the peak hours and 60-minute headways during the off-peak hours. Saturday and Sunday service runs from 5:45 a.m. to 8:30 p.m. with 60-minute headways. Ridership from Miami-Dade County indicates an annual ridership of 45,653 in 2005.~~

- ~~**Route 242 - Doral Connection** starts service from the Palmetto Metrorail Station, and runs along NW 82nd Avenue, NW 58th Street, NW 9th Avenue, NW 41st Street, NW 33rd Street, NW 87th Avenue, NW 25th Street, NW 97th Avenue, NW 19th Street, and NW 14th Street. It serves Ryder System, Inc. Latin America headquarters on NW 82nd Avenue, Miami-Dade Police Headquarters on NW 25th Street, NW 74th Street Connector, Koger Office Center, International Corporate Center, NW 107th Avenue, Miami International Mall, and the Dolphin Mall. This route operates only during the weekdays with service from 5:50 a.m. to 7:10 p.m. with 30-minute headways during the peak hours and 60-minute headways during the off-peak hours. Ridership from Miami-Dade County indicates an annual ridership of 16,675 in 2005.~~

~~The ridership data for the Metrobus routes within Doral were obtained from Miami-Dade Transit (MDT). *Table 2-4* presents annual ridership within Doral for January to December 2005. The ridership within the City was calculated by multiplying the ridership of the metrobus route by the percentage of the total route that lies within the City boundary. Hence the ridership information within the City is only an approximation and has been approved by Miami-Dade Transit.~~

~~Table 2-4: Annual Ridership of MDT Routes within Doral~~

~~Route Name~~	~~% of Route within Doral~~	~~Jan-05~~	~~Feb-05~~	~~Mar-05~~	~~Apr-05~~	~~May-05~~	~~Jun-05~~	~~Jul-05~~	~~Aug-05~~	~~Sep-05~~	~~Oct-05~~	~~Nov-05~~	~~Dec-05~~	~~Annual Ridership~~
~~7~~	~~1%~~	~~1,220~~	~~1,184~~	~~1,116~~	~~1,851~~	~~1,276~~	~~1,196~~	~~1,254~~	~~1,234~~	~~1,266~~	~~1,194~~	~~1,421~~	~~1,406~~	**~~15,618~~**
~~36~~	~~14%~~	~~10,646~~	~~10,496~~	~~11,404~~	~~11,227~~	~~10,224~~	~~9,677~~	~~10,198~~	~~10,628~~	~~10,894~~	~~10,036~~	~~11,444~~	~~11,316~~	**~~128,188~~**
~~71~~	~~3%~~	~~1,428~~	~~1,371~~	~~1,527~~	~~1,264~~	~~1,188~~	~~1,139~~	~~1,133~~	~~1,266~~	~~1,465~~	~~1,207~~	~~1,246~~	~~1,263~~	**~~15,496~~**
~~87~~	~~16%~~	~~8,607~~	~~7,957~~	~~9,062~~	~~7,935~~	~~8,187~~	~~7,451~~	~~6,355~~	~~7,693~~	~~7,996~~	~~7,070~~	~~8,419~~	~~8,463~~	**~~95,196~~**
~~95X~~	~~6%~~	~~2,250~~	~~2,253~~	~~2,682~~	~~2,256~~	~~2,364~~	~~2,230~~	~~2,022~~	~~2,469~~	~~2,678~~	~~1,964~~	~~2,131~~	~~2,336~~	**~~27,635~~**
~~132/Koger/Tri-Rail Shuttle~~	~~48%~~	~~430~~	~~696~~	~~286~~	~~813~~	~~180~~	~~323~~	~~472~~	~~356~~	~~276~~	~~140~~	~~324~~	~~188~~	**~~4,471~~**
~~238/East-West Connection~~	~~23%~~	~~3,803~~	~~3,561~~	~~4,021~~	~~3,565~~	~~3,676~~	~~3,542~~	~~3,453~~	~~4,062~~	~~4,017~~	~~3,348~~	~~4,222~~	~~4,384~~	**~~45,653~~**
~~242/Doral Connection~~	~~14%~~	~~1,290~~	~~1,138~~	~~1,441~~	~~1,939~~	~~1,251~~	~~1,221~~	~~936~~	~~1,501~~	~~1,593~~	~~1,238~~	~~1,704~~	~~1,424~~	**~~16,675~~**

~~Total Annual Ridership from January 2005 to December 2005~~

~~Peak Hour Capacities and Headways.~~ ~~This section provides an analysis of the peak hour capacities of the transit routes along with their headways, vehicle characteristics, and ridership data. As mentioned earlier, the City of Doral is served by eight Metrobus routes. It is observed that the peak hour headways for the routes range between 15 minutes and 30 minutes, and off-peak hour headways range between 30 minutes and 60 minutes. The transit characteristics for the eight MDT routes in Doral are presented in *Table 2-5*.~~

~~Table 2-5: Transit Service Characteristics~~

~~Route~~	~~Peak Headway (min)~~	~~Off-Peak Headway (min)~~	~~Total Peak Hour Vehicles~~	~~Total Off-Peak Hour Vehicles~~
~~7~~	~~20~~	~~40~~	~~3~~	~~1~~
~~36~~	~~15~~	~~60~~	~~6~~	~~1~~
~~71~~	~~30~~	~~30~~	~~2~~	~~2~~
~~87~~	~~30~~	~~30~~	~~2~~	~~2~~
~~95X~~	~~N/A~~	~~N/A~~	~~N/A~~	~~N/A~~
~~238 (East-West Connection)~~	~~30~~	~~60~~	~~1~~	~~1~~
~~242 (Doral Connection)~~	~~30~~	~~60~~	~~2~~	~~1~~
~~Koger/Tri-Rail Shuttle~~	~~20~~	~~60~~	~~3~~	~~1~~

~~Source: Miami-Dade Transit Authority~~

~~Population Characteristics.~~ ~~As reported by the US Census Bureau in 2000, the City of Doral had a population of 20,438, which constitutes approximately 0.91 percent of the total Miami-Dade County population. Census 2000 also reports that 84 percent of the City of Doral population is Caucasian, 2.7 percent African American, 5.1 percent Asian, and the remaining from other races. The average household size is 2.66 persons and the median household income is $53,060. In addition, the population density is approximately 1,553 individuals per square mile.~~

~~**Transportation Disadvantaged.** The transportation disadvantaged includes individuals who, because of physical or mental disability, income status, or age, are unable to transport themselves or purchase transportation. As a result, these individuals are dependent upon others to obtain access to health care, employment, education, shopping, social, or other life-sustaining activities. Currently, Miami-Dade County offers transportation services to the transportation disadvantaged through the County's Community Action Agency. The Community Action Agency has a transportation unit that offers reliable transportation to disadvantaged citizens. This program benefits approximately two percent of those who are unable to commute to work using private transportation. Moreover, it assists approximately four percent of families living in poverty.~~

~~According to the 2000 US Census, 230, or approximately 3 percent, of the 7,692 households in the City of Doral are without a vehicle. The census also stated that 284 persons (2.9 percent of the total 2000 working population) used public transportation (bus, elevated, or rail) walked, or used some other measure of transportation other than car, truck, or van to travel to work. Although a small percentage of the city's population is transportation disadvantaged, Doral's public transportation system provides this segment of the population with limited access to transportation for work, shopping, and other activities. The eastern and the southern regions of Doral are very well served by transit. However, there is a significant amount of residential, commercial and industrial land uses in the northern and western regions of Doral that are not served by transit at all. The City will place special emphasis on monitoring the local needs of this population to assure that adequate service is always provided.~~

~~**Existing Characteristics of Major Trip Generators and Attractors.** The biggest trip generator within the City of Doral is the Miami International Mall located at the intersection of SR 836 (Dolphin Expressway) and NW 107th Avenue. Other major trip generators/attractors within the City of Doral are the Miami-Dade Police Headquarters, Miami International Commerce Center, Koger Executive Center, Doral Estates, Costa Del Sol Golf Course, Doral Park and Golf Club, Gateway Park, and the Lakeside Memorial Park.~~

~~**Existing Pedestrian Facilities.** The availability of pedestrian facilities and amenities plays an important role in the walkability of a community. Benefits associated with walking include the ability to ease traffic congestion, personal health/recreation, and reduced need for automobile parking facilities. In order to be considered a realistic transportation choice, however, existing conditions and facilities need to be favorable for pedestrians.~~

~~The existing pedestrian facilities within Doral are shown in *Map 2-6*. Most of the major thoroughfares have sidewalks on at least one side. NW 87th Avenue and most of NW 107th Avenue and NW36th Street/NW 41st Street have sidewalks on both sides. Sidewalk deficiencies were noted in many of the local streets within the residential areas. *Map 2-5* illustrates the pedestrian facilities that serve Doral.~~

~~**Existing Bicycle Facilities.** There are no designated bicycle facilities (defined as bicycle paths or bicycle lanes) within the City of Doral. The availability of bicycle facilities plays an important role in promoting bicycling as a favorable transportation mode. Benefits associated with bicycling include the ability to ease traffic congestion,~~

~~improve personal health, provide recreational opportunities, and reduce the need for automobile parking. In order to be considered a realistic transportation choice, the existing bicycle facilities need to be favorable for bicycle use by all skill levels.~~

~~**Heavy Truck Traffic.** Heavy truck traffic generated by businesses west of the Turnpike is forced to travel through Doral's residential areas to access the NW 41st Street Turnpike entrance ramp. The heavy trucks, predominantly dump trucks, are creating a serious problem within the northwest section of the city. The trucks contribute to increased levels of congestion in the City and also create additional hazards by leaving debris on the road. Currently NW 122nd Avenue, from NW 58th Street to NW 41st Street, is under construction. This corridor will ultimately serve as a truck route to alleviate some of the heavy truck issues on NW 41st Street. The Transportation Master Plan also contains some recommendations on separating truck traffic and the vehicular traffic within the City.~~

~~**Availability of Transportation Facilities and Service to Serve Existing Land Uses.** The City of Doral contains approximately 9,898 gross acres of land. The predominant developed land use in the city is industrial/utilities, which accounts for approximately 17.3 percent of the land. Vacant, undeveloped lands account for 18.4 percent, parks and recreation (including preserves and conservation areas) for 9.3 percent, residential for 9.8 percent, office for 4.1 percent, commercial for 3.9 percent, agriculture for 3.0 percent, institutional for 1.7 percent. The remaining acreage, 32.5 percent, is comprised of streets and open space, communications, other utilities, terminals and plants, water bodies, hotel, office, and cemeteries. *Table 2-6* lists the primary land uses along some of the city's significant transportation corridors.~~

~~**Table 2-6**~~
~~**Primary Land Uses Adjacent to Major Transportation Corridors**~~

~~Roadway~~	~~Facility Type~~	~~Primary Land Uses~~
~~SR 836/Dolphin Expressway~~	~~Freeway/State Arterials~~	~~Residential, Industrial, Park, Commercial, and Communications~~
~~SR 826/Palmetto Expressway~~	~~Freeway/State Arterials~~	~~Airport, Residential, Industrial, Park, Office, Commercial, and Communications~~
~~SR 821/Florida's Turnpike~~	~~Freeway/State Arterials~~	~~Residential, Industrial, Industrial Extraction, Park, Commercial, Water, Communications, and Vacant~~
~~NW 107th Avenue~~	~~County Minor Arterial~~	~~Residential, Park, Agriculture, Industrial, Commercial, and Communications~~
~~NW 97th Avenue~~	~~County Collector~~	~~Residential, Park, Agriculture, Industrial, and Communications~~
~~NW 87th Avenue~~	~~County Minor Arterial~~	~~Park, Office, Industrial, and Communications~~
~~NW 25th Street~~	~~County Minor Arterial~~	~~Residential, Agriculture, Industrial, and Cemeteries~~

~~Roadway~~	~~Facility Type~~	~~Primary Land Uses~~
~~NW 36th Street/41st Street~~	~~County Principal Arterial~~	~~Residential, Park, Agriculture, Commercial, Office, and Vacant~~
~~NW 58th Street~~	~~County Minor Arterial~~	~~Residential, Park, and Industrial~~
~~NW 12th Street~~	~~County Minor Arterial~~	~~Commercial, Office, and Industrial~~

~~Results from the level of service analysis demonstrate poor traffic operating conditions on several major arterials within the City of Doral (SR 836/Dolphin Expressway and NW 25th Street) and are projected to deteriorate in the future. These facilities play an important role in the countywide traffic circulation system and carry a high percentage of through trips. The remaining roadways within the city primarily provide access to adjacent land uses and other arterial roadways. However, as congestion worsens on the arterial roadways, cut-through traffic may increase on collector roadways thereby degrading their level of service. *Maps 2-5 and 2-6* illustrate the transit and pedestrian facilities that serve Doral.~~

~~**Adequacy of Existing and Projected Evacuation Transportation System**. The City of Doral is not located in a coastal evacuation area, therefore the evacuation criteria does not apply. The Miami-Dade County's Adopted Comprehensive Development Master Plan identifies the designated local and regional transportation facilities critical to the evacuation of the coastal population. In the event of a local disaster, the following routes located along the City of Doral's eastern, western and southern boundaries have been identified for evacuation:~~

- ~~SR 826 (Palmetto Expressway)~~
- ~~SR 821 (Florida's Turnpike)~~
- ~~SR 836 (Dolphin Expressway)~~

~~FUTURE TRANSPORTATION DATA REQUIREMENTS~~

~~Future Transportation Map Series~~

~~The following series of maps represent the future conditions (2030) for the transportation network on a multi-modal basis. This includes the roadway system, public transit system, and bicycle and pedestrian facilities within the City of Doral.~~

~~**Map 2-13: Major Thoroughfares by Number of Lanes (2030)** illustrates the major thoroughfares in Doral by the number of through lanes for each facility anticipated in 2030.~~

~~**Map 2-14: Major Thoroughfares by Functional Classification (2030)** identifies the 2030 roadway network, including arterial and collector streets and their functional classification. The functional classification system indicates the role of each thoroughfare in meeting current travel demands, assists in defining land use relationships, and reveals the jurisdiction responsible for maintenance.~~

~~**Map 2-15: Limited Access Facilities, Significant Parking Facilities (2030)** delineates the future limited and controlled access facilities in Doral, as well as the locations of significant parking facilities.~~

~~**Map 2-16: Major Trip Generators and Attractors (2030)** illustrates the major trip generators and attractors within Doral that contribute to the demand on the transportation network.~~

~~**Map 2-17: Future Transit Facilities (2030)** indicates the proposed premium transit improvements on State Road 836 (Dolphin Expressway) and State Road 826 (Palmetto Expressway) anticipated before the Year 2030.~~

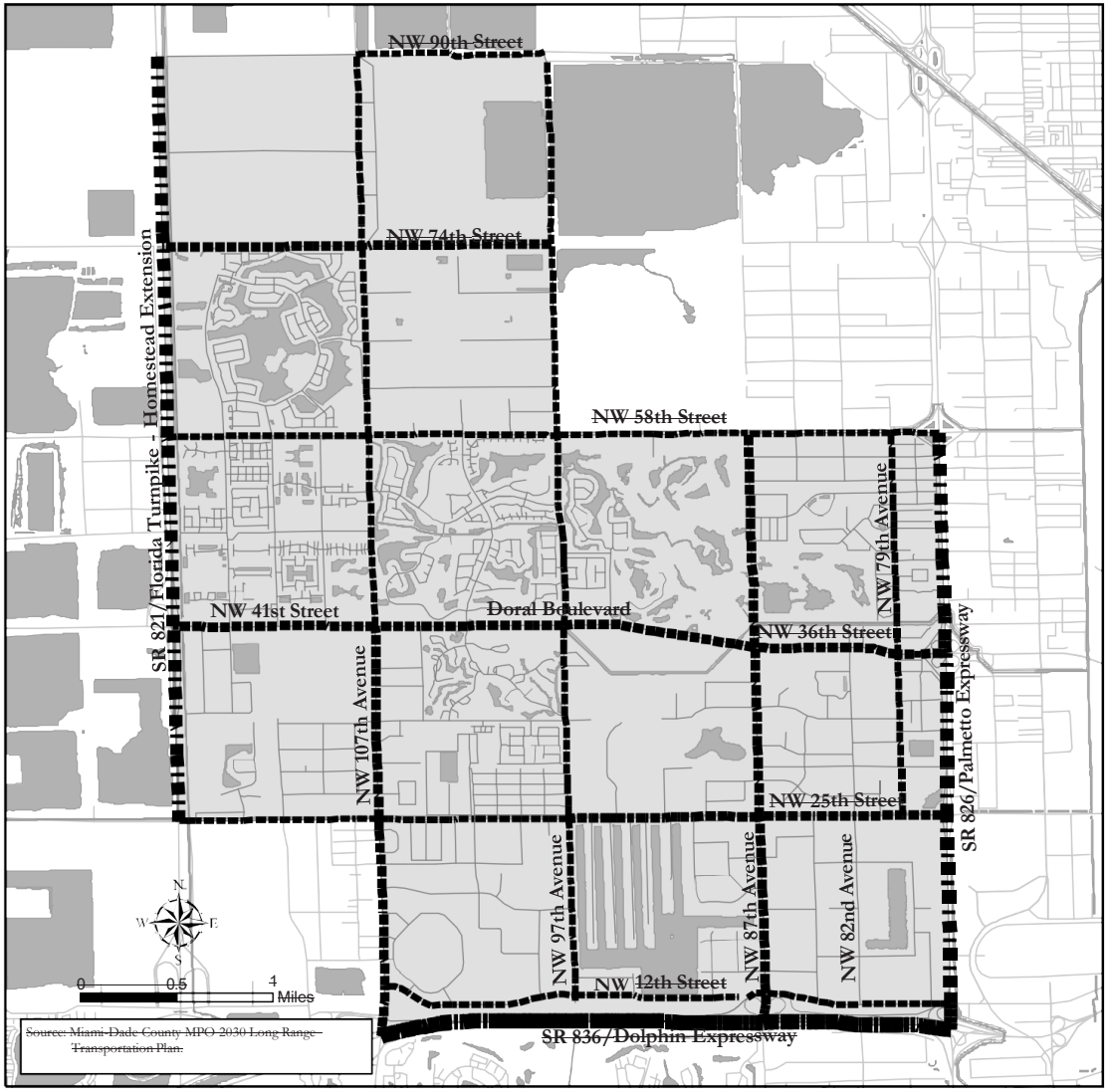
~~**Map 2-18: Future Bicycle Facilities (2030)** identifies proposed off-street bicycle facilities within the City of Doral. These improvements are not currently identified in the Miami-Dade 2030 Transportation Plan or the Miami-Dade Metropolitan Planning Organization's 2001 Bicycle Facilities Plan.~~

~~**Map 2-19: Future Pedestrian Facilities (2030)** identifies proposed pedestrian-related facilities within the City of Doral. These improvements are not currently identified in the Miami-Dade 2030 Transportation Plan or the Miami-Dade Metropolitan Planning Organization's 2001 Pedestrian Plan.~~

~~**Map 2-20: Future Vehicular Levels of Service (LOS) on Major Thoroughfares (2030)** illustrates peak hour/peak direction levels of service calculated for major roadways within the City based on build out of the existing land use pattern plus additional development potential within the City of Doral.~~

~~**Map 2-21: Future Airport Clear Zones (2030)** delineates the Miami International Airport (MIA) runway clear zones in relation to the Doral city limits.~~

~~***Map 2-13*: Major Thoroughfares by Number of Lanes (2030)**~~



CITY OF DORAL

Major Thoroughfares Number of Lanes (2030)

Map II-13

Legend

- 2 Lanes
- 4 Lanes
- 5 Lanes
- 6 Lanes
- 8 Lanes
- 10 Lanes
- 12 Lanes
- Doral City Limit
- Water Bodies

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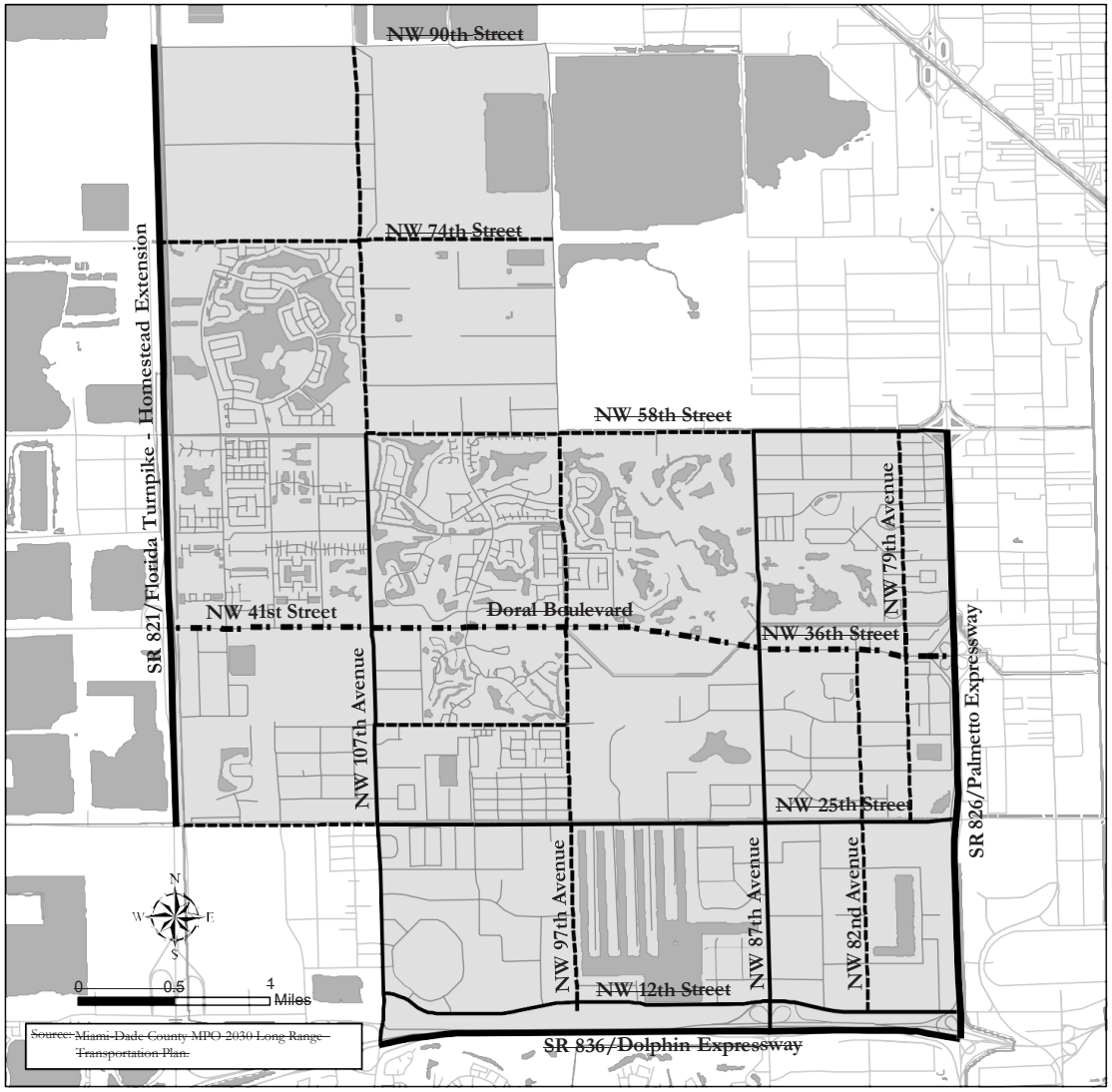
~~***Map 2-14*: Major Thoroughfares by Functional Classification (2030)**~~



CITY OF DORAL

Major Thoroughfares by Functional Classification (2030)

Map II-14

Legend

- Urban Principal Arterial-Freeways and Expressways
- Urban Principal Arterial-Other
- Urban Minor Arterial
- Urban Collector
- Doral City Limit
- Water Bodies

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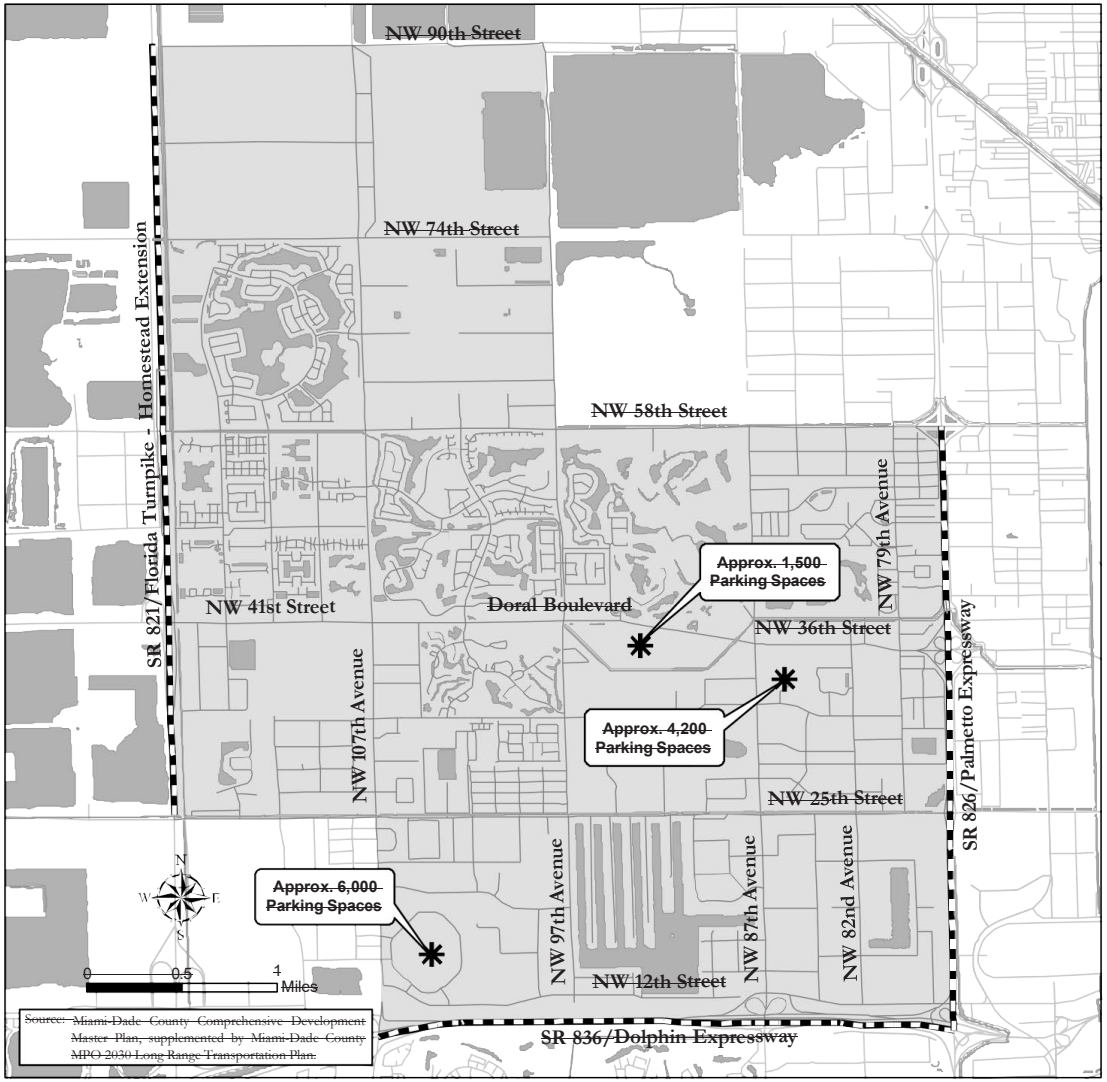
~~***Map 2-15*: Limited Access Facilities, Significant Parking Facilities (2030)**~~



CITY OF DORAL

Limited Access and Significant Parking Facilities (2030)

Map II-15

Legend

- Limited Access Facility
- Significant Parking Facility
- Doral City Limit
- Water Bodies

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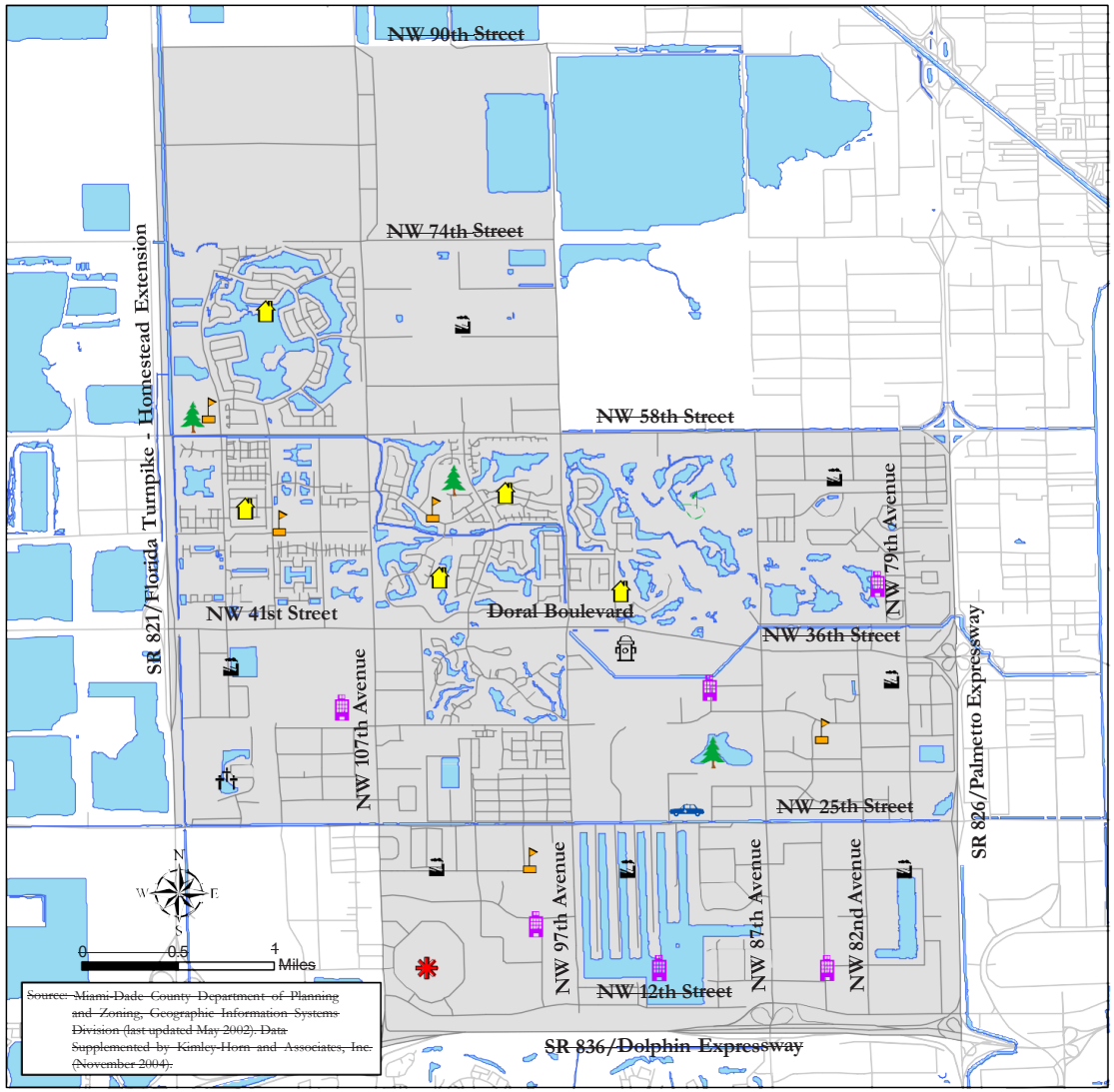
~~***Map 2-16*: Major Trip Generators and Attractors (2030)**~~



Source: Miami-Dade County Department of Planning and Zoning, Geographic Information Systems Division (last updated May 2002). Data Supplemented by Kimley-Horn and Associates, Inc. (November 2004).

CITY OF DORAL

Major Trip Generators and Attractors (2030)

Map II-16

Legend

- Miami-Dade County Police Headquarters
- Miami-Dade County Fire Rescue Headquarters
- Employment Center
- Industrial
- Doral Resort and Spa
- Our Lady of Mercy Catholic Cemetery and Mausoleum
- Parks
- School
- Shopping Center
- Residential
- Doral City Limit
- Water Bodies

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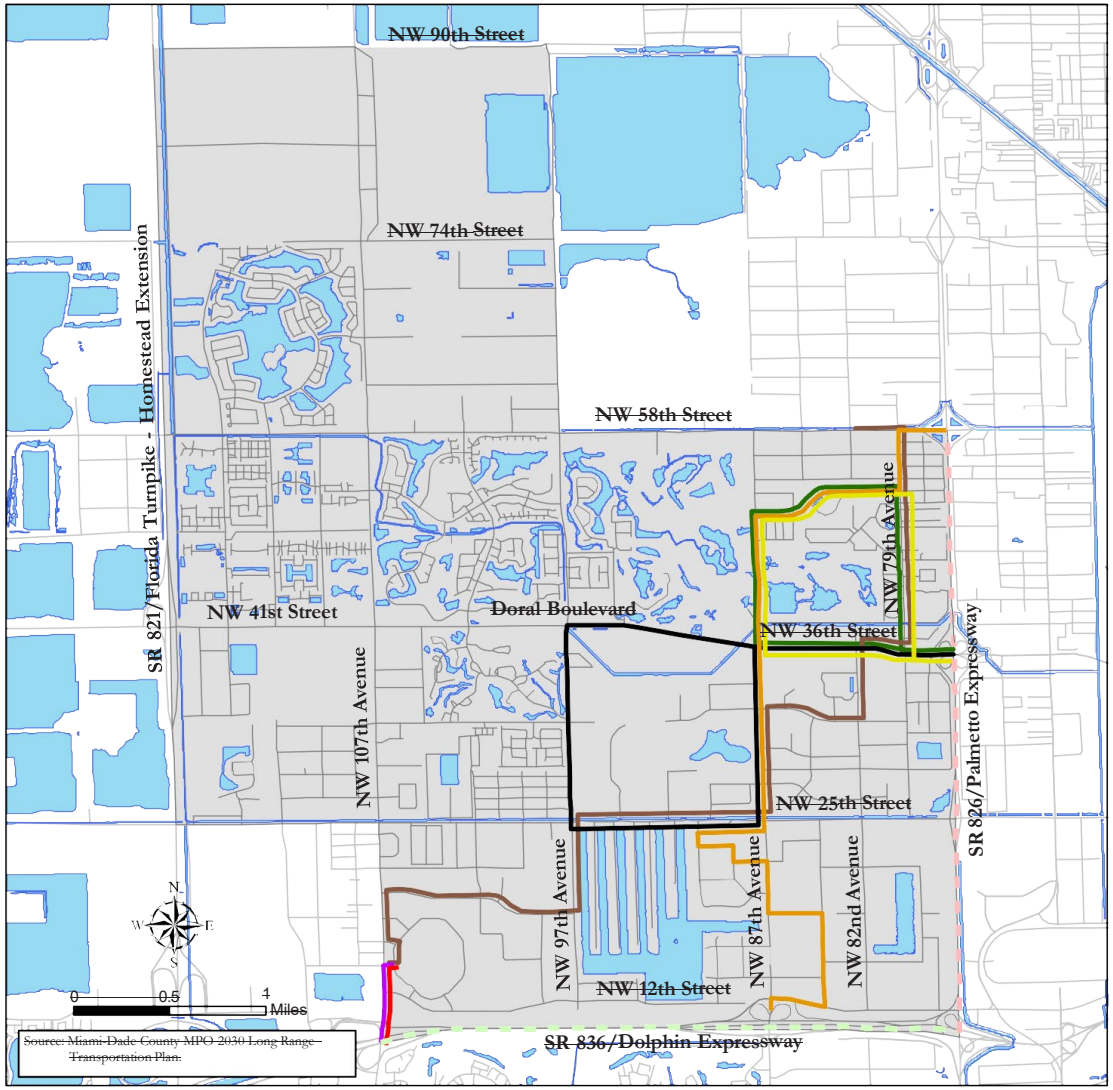
~~***Map 2-17*: Future Transit Facilities (2030)**~~



Source: Miami-Dade County MPO 2030 Long Range Transportation Plan.

CITY OF DORAL

Transit Facilities (2030)

Map II-17

Legend

- Route 7
- Route 36
- Route 71
- Route 87
- Route 95
- Route 238 (East-West Connection)
- Route 242 (Doral Connection)
- Route 132 Koger/Tri-Rail Shuttle
- Premium Transit
- Premium Transit
- Doral City Limit
- Water Bodies

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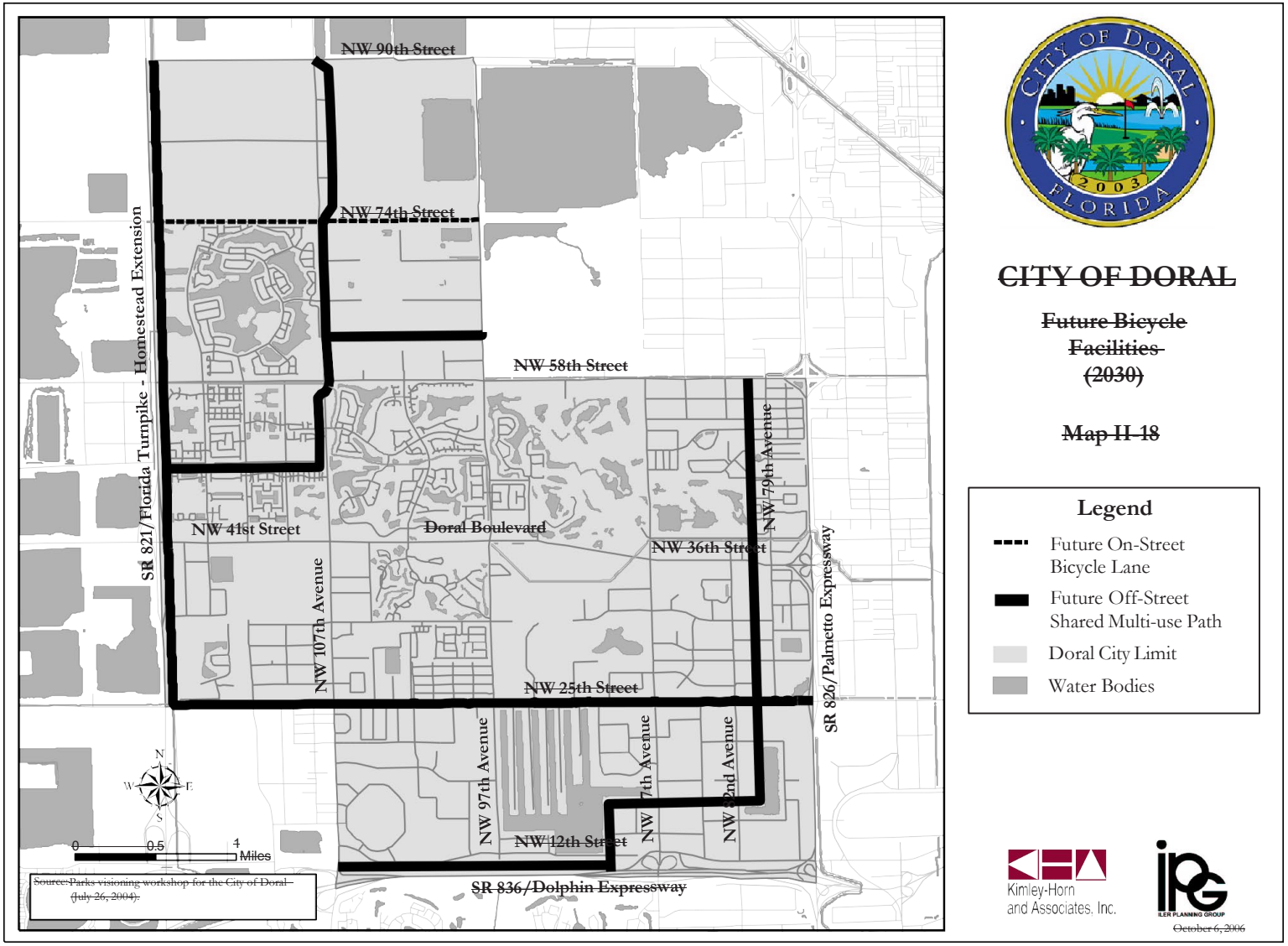
~~***Map 2-18*: Future Bicycle Facilities (2030)**~~


NW 90th Street
NW 74th Street
NW 58th Street
NW 41st Street
Doral Boulevard
NW 36th Street
NW 25th Street
NW 12th Street
SR 836/Dolphin Expressway
SR 821/Florida Turnpike - Homestead Extension
NW 107th Avenue
NW 97th Avenue
NW 87th Avenue
NW 82nd Avenue
NW 79th Avenue
SR 826/Palmetto Expressway
N
S
E
W
0
0.5
4
Miles
Source: Parks visioning workshop for the City of Doral (July 26, 2004).
CITY OF DORAL
Future Bicycle Facilities (2030)
Map II-18
Legend
Future On-Street Bicycle Lane
Future Off-Street Shared Multi-use Path
Doral City Limit
Water Bodies
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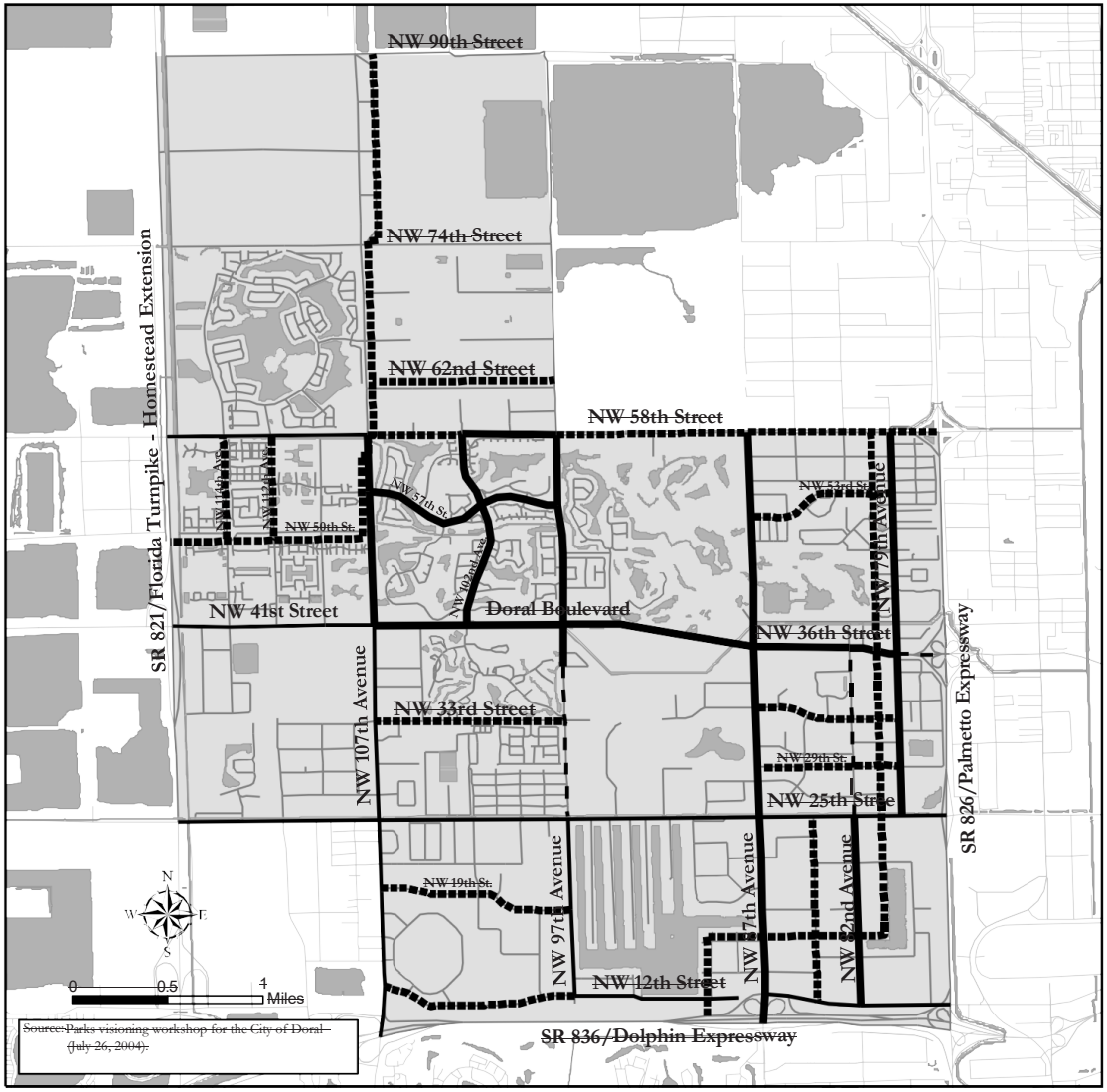
October 6, 2006

~~***Map 2-19*: Future Pedestrian Facilities (2030)**~~



Source: Parks visioning workshop for the City of Doral (July 26, 2004).

CITY OF DORAL

Major Thoroughfares Future Pedestrian Facilities (2030)

Map II-19

Legend

- Sidewalk (One Side)
- Sidewalk (Both Sides)
- No Sidewalks
- Future Pedestrian Path
- Doral City Limit
- Water Bodies

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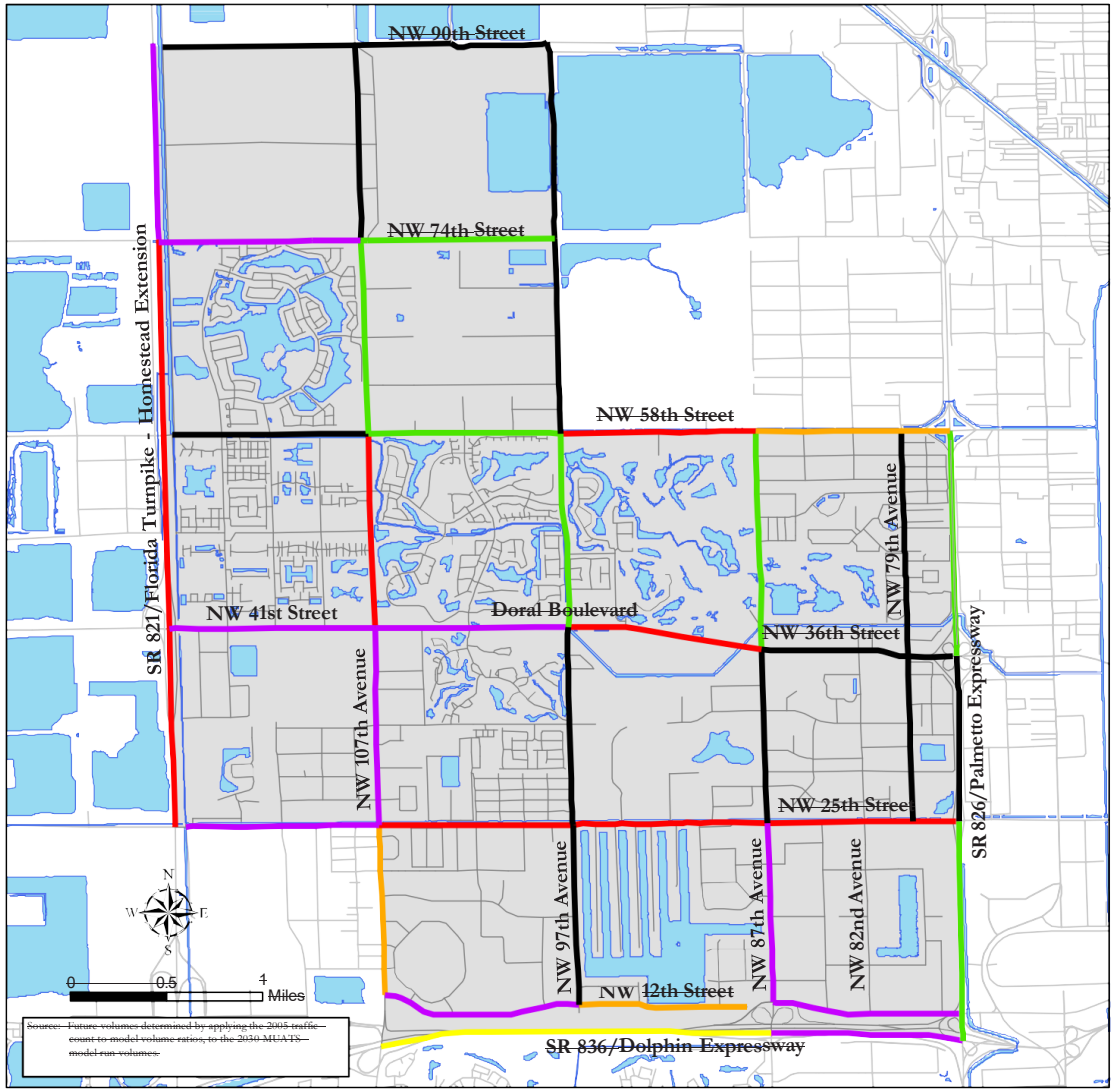
~~***Map 2-20*: Future Vehicular Levels of Service (LOS) on Major Thoroughfares (2030)**~~



Source: Future volumes determined by applying the 2005 traffic count to model volume ratios, to the 2030 MUATS model run volumes.

CITY OF DORAL

Major Thoroughfares Peak Hour/Peak Direction Vehicular Level of Service (2030)

Map II-20

Legend

- LOS "B" or Better
- LOS "C"
- LOS "D"
- LOS "E"
- LOS "E + 20"
- LOS "F"
- Doral City Limit
- Water Bodies

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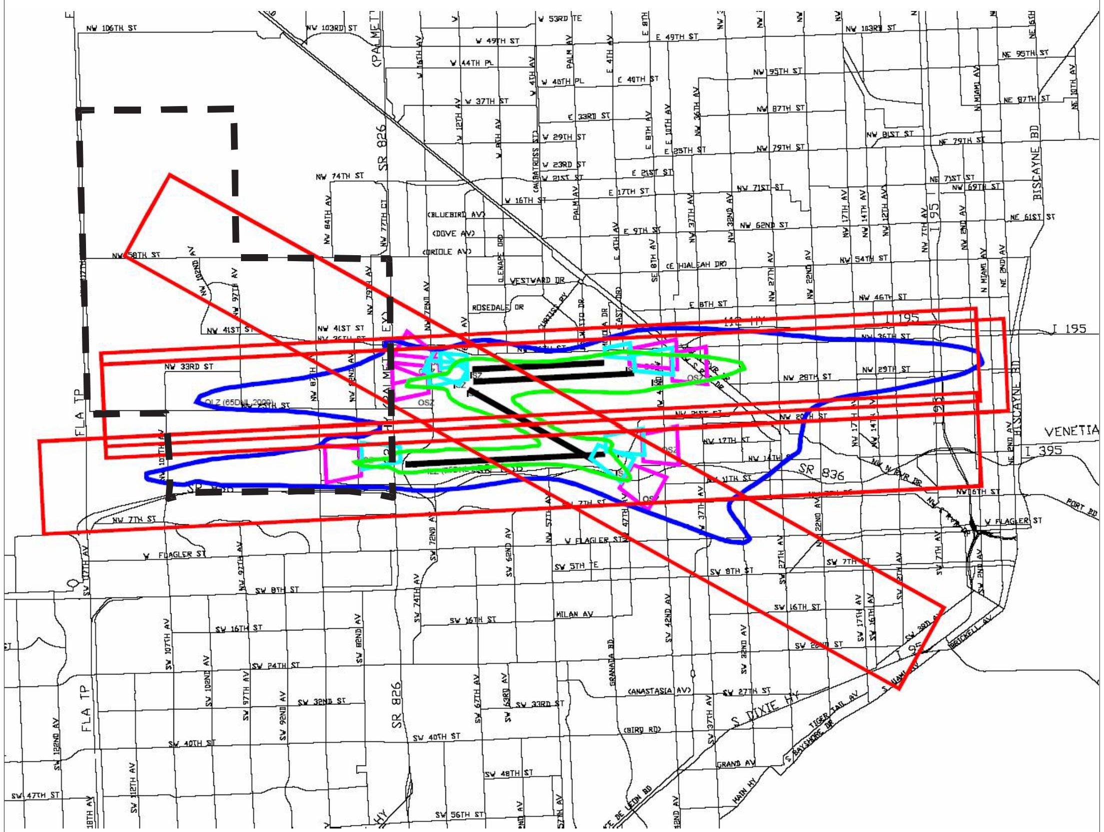
~~***Map 2-21*: Future Airport Clear Zones (2030)**~~



Source: Miami International Airport Zoning Map

CITY OF DORAL

Airport Clear Zones (2030)

Map II-21

Legend

- Inner Safety Zone (ISZ)
- Outer Safety Zone (OSZ)
- Inner Land Use Zone (ILZ)
- Outer Land Use Zone (OLZ)
- Critical Area Approach Zone (CAA)
- Doral City Limit

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ILER PLANNING GROUP

April 26, 2006

~~Analysis of Future Transportation System~~

~~Transportation System Levels of Service and Growth Trends.~~ ~~The City of Doral is generally built-out with low intensity non-residential land uses; leaving approximately 18.4 percent of the land area for new development and the remaining land area for future infill development and redevelopment. The City's Future Land Use Map (FLUM) looks aggressively forward to establishing mixed-use, neighborhood centers and establishing more balance between residential and non-residential land uses citywide. This results in significant departures from the land use distribution and allowable densities/intensities memorialized in the previous Miami-Dade County Future Land Use Map, previously utilized by the City.~~

~~*Map 2-7* (Vehicular Level of Service) denotes the existing level of service for the major thoroughfares traversing the City of Doral. Several departures from existing conditions are projected over the long-range planning horizon (2030) based on the assumed transportation network, projected increases in 'through' traffic for the area, and the distribution of land uses and densities/intensities identified in the City's Future Land Use Map. Anticipated development and redevelopment within the City of Doral was quantified assuming the allocation of land use based upon the FLUM, minimum ratios for a mix of land uses, and maximum densities and intensities associated with each land use category. This information was then incorporated into the financially-constrained Miami-Urban Area Transportation Study (MUATS) model for the Year 2030 to forecast future year (2030) traffic volumes for the City's transportation network.~~

~~The MUATS model was developed for and accepted by the FDOT as a traffic forecasting model for Miami-Dade County and was used to forecast the traffic impacts from growth in the City of Doral through the year 2030 as defined by the FLUM.~~

~~Existing and Projected Inter-Modal Deficiencies and Needs.~~ ~~There are currently no dedicated or planned intermodal facilities within the City of Doral through the year 2030. Nearby intermodal facilities include the Earlington Heights, Palmetto and Okeechobee Metrorail stations. Transit connections to these facilities in Doral are provided by Metrobus routes 87, 95, and 242 - Doral Connection.~~

~~Impact of Anticipated Land Use on Transportation System Levels of Service.~~ ~~The anticipated land use scenario for this analysis assumes build-out of the City's FLUM. The City's FLUM departs significantly from the current Miami-Dade County FLUM previously administered for this area. The City's FLUM establishes mixed-use, neighborhood centers and creates more balance between residential and non-residential land uses citywide. Vacant, undeveloped lands in the western portions of the City are targeted for significant residential development, imploring the principles of new urbanism and more sustainable development. General intensification of land uses associated with infill development and redevelopment of existing commercial and industrial areas are also anticipated citywide. Combined the proposed residential and non-residential development anticipated in Doral will have a significant impact on level of service for roadways within the City; however, 'through traffic' is still anticipated to be a primary contributor to level of service deficiencies for several thoroughfares through 2030.~~

~~**Traffic Forecasting Methodology.** Future year traffic volumes for major thoroughfares within the City of Doral were developed through the Year 2030 using the Miami Urban Area Transportation Study (MUATS) model. Various changes were made to the socioeconomic data for the MPO's approved 2030 Minimum Revenue Plan to incorporate anticipated land use conditions for the City identified in the FLUM. Traffic forecasting models are only approximations of actual traffic behavior. As such, they can provide order of magnitude projections rather than accurate traffic volumes. However, it is widely accepted that the strength of these models resides in their capability to illustrate trends. For example, models are better able to forecast future year increases in traffic volumes than predict actual traffic volumes.~~

~~The trend forecasting capability of the MUATS model was used to predict future year traffic volumes by calculating individual annual compound growth rates for each major roadway segment using the 2000 validation model and the 2030 modified cost feasible model for the area and applying these growth rates to Year 2005 traffic volumes available for the various roadway segments. The 2030 annual average daily traffic (AADT) was converted into peak hour peak direction volumes using the peak hour (K=8.22%) factor and directional (D=53.31%) factor for City roadways. Maximum service volumes for several of the roadway links under study were also adjusted to represent capacity improvements represented in the 2030 cost feasible travel demand model. Level of service measurements for 2030 rely upon the same volume-to-capacity ratios used for evaluating level of service in the existing conditions analysis (see *Table 2-3*).~~

~~**Short-Term (2011) Projected Traffic Conditions.** As illustrated in *Table 2-3* and *Map 2-7*, NW 25th Street from NW 97th Avenue to SR 826 are operating below their adopted LOS. In order to assess the operating LOS of roadways within the five-year timeframe, 2011 LOS was projected. The 2011 volumes were projected by applying the growth rate (calculated from the method explained above) to the 2005 traffic volumes.~~

~~The only programmed improvement within the City of Doral includes the widening of NW 25th Street from NW 87th Avenue to SR 826 from four to six lanes. According to the 2011 analysis, all roadways are projected to operate at or above the adopted LOS with the exception of the following segments:~~

- ~~NW 25th Street, from NW 97th Avenue to NW 87th Avenue; and~~
- ~~NW 107th Avenue, from NW 25th Street to NW 41st Street.~~

~~NW 25th Street from NW 97th Avenue to NW 87th Avenue is projected to operate at LOS F in 2011. The following actions will be taken to address the LOS deficiency on this segment:~~

- ~~A corridor study will be performed to determine the operational characteristics of NW 25th Street between the HEFT and SR 826. The study will collect data on signal timings, signal synchronization and access management to develop strategies for improving operational efficiencies in the corridor.~~
- ~~The segment will be programmed for widening to 6-lanes in order to maintain the adopted LOS D in 2011. The City will coordinate with Miami-Dade County MPO and FDOT to implement improvements on the segment by extending~~

~~the proposed widening project for NW 25th Street, from NW 87th Avenue to SR 826, to include this segment.~~

~~The implementation of the above-mentioned recommendations combined with the programmed improvements will help maintain the operating LOS of NW 25th Street in the short-term.~~

~~NW 107th Avenue from NW 25th Street to NW 41st Street is projected to operate at LOS E in 2011. This segment is programmed to be widened to 6-lanes under the Priority III category (2016 – 2020) according to the Miami-Dade MPO 2030 Long Range Transportation Plan. The following actions will be taken to address the LOS deficiency on this segment:~~

- ~~The City will coordinate with Miami-Dade County MPO to advance the planned improvement for NW 107th Avenue from a Priority III to a Priority II (2010-2015) category. This will implement the capacity improvement to meet the projected deficiency.~~
- ~~The City will also add these segments to the planned roadway improvements for 2011 in the Transportation and Capital Improvements Elements.~~

~~*Table 2-7* illustrates the projected LOS in 2011 with the recommended widening of NW 25th Street from NW 97th Avenue to NW 87th Avenue and NW 107th Avenue from NW 25th Street to NW 41st Street will meet the adopted LOS.~~

~~Table 2-7~~
~~2011 Vehicular Levels of Service~~

~~Roadway Segment~~	~~Adopted LOS[1]~~	~~Number of Lanes~~	~~Peak Hour/ Peak Direction Capacity[2]~~	~~2006 AADT~~	~~Growth Rate~~	~~2011 AADT (Projected w/ Growth Rate)~~	~~2011 Volume (Peak Hour/Peak Direction)~~	~~V/C Ratio[6]~~	~~2011 LOS~~
~~SR 836 (Dolphin Expressway)~~									
~~107th Avenue to 87th Avenue~~	~~D~~	~~12L D~~	~~12,850~~	~~146,000~~	~~1.66%~~	~~158,083~~	~~6,777~~	~~0.53~~	~~B or Better~~
~~87th Avenue to SR 826~~	~~D~~	~~10L D~~	~~10,620~~	~~97,500~~	~~1.23%~~	~~103,498~~	~~8,211~~	~~0.77~~	~~C~~
~~SR 826 (Palmetto Expressway)~~									
~~SR 836 to NW 25Street~~	~~D~~	~~10L D~~	~~10,620~~	~~205,000~~	~~0.57%~~	~~210,845~~	~~7,516~~	~~0.71~~	~~B or Better~~
~~NW 25th Street to NW 41st Street/ 36th Street~~	~~D~~	~~10L D~~	~~10,620~~	~~157,000~~	~~0.64%~~	~~162,026~~	~~5,776~~	~~0.54~~	~~B or Better~~
~~NW 41st Street/ 36th Street to NW 58th Street~~	~~D~~	~~10L D~~	~~10,620~~	~~175,500~~	~~0.88%~~	~~183,247~~	~~6,532~~	~~0.62~~	~~B or Better~~
~~SR 821 (Florida's Turnpike/)~~									
~~SR 836 to NW 41st St/ 36th St~~	~~D~~	~~6L D~~	~~6,150~~	~~91,400~~	~~2.27%~~	~~101,761~~	~~5,896~~	~~0.96~~	~~E~~
~~NW 41st St/ 36th St to NW 74th St~~	~~D~~	~~6L D~~	~~6,150~~	~~91,400~~	~~2.10%~~	~~100,976~~	~~5,850~~	~~0.95~~	~~E~~
~~North of NW 74th St~~	~~D~~	~~6L D~~	~~6,150~~	~~91,400~~	~~1.73%~~	~~99,292~~	~~5,753~~	~~0.94~~	~~E~~
~~NW 58th Street~~									
~~NW 117th Avenue to NW 107th Avenue~~	~~D~~	~~4L~~	~~1,767~~	~~13,000~~	~~1.25%~~	~~13,814~~	~~605~~	~~0.34~~	~~B or Better~~
~~NW 107th Avenue to NW 97th Avenue~~	~~D~~	~~4L~~	~~1,767~~	~~18,000~~	~~1.69%~~	~~19,524~~	~~856~~	~~0.48~~	~~B or Better~~
~~NW 97th Avenue to NW 87th Avenue~~	~~D~~	~~4L~~	~~1,767~~	~~35,000~~	~~1.10%~~	~~33,988~~	~~1,489~~	~~0.84~~	~~D~~
~~NW 87th Avenue to SR 826~~	~~D~~	~~4L~~	~~1,767~~	~~32,000~~	~~0.84%~~	~~33,338~~	~~1,461~~	~~0.83~~	~~D~~
~~NW 41st Street/ NW 36th Street~~									
~~Heft to NW 107th Avenue~~	~~D~~	~~6L~~	~~2,790~~	~~42,000~~	~~0.88%~~	~~43,849~~	~~1,922~~	~~0.69~~	~~B or Better~~
~~NW 107th Avenue to NW 97th Avenue~~	~~D~~	~~6L~~	~~2,790~~	~~44,000~~	~~0.97%~~	~~46,123~~	~~2,021~~	~~0.72~~	~~C~~
~~NW 97th Avenue to NW 87th Avenue~~	~~D~~	~~6L~~	~~2,790~~	~~54,000~~	~~0.96%~~	~~56,579~~	~~2,479~~	~~0.89~~	~~D~~
~~NW 87th Avenue to SR 826~~	~~E[3]~~	~~6L~~	~~2,790~~	~~39,000~~	~~0.20%~~	~~39,398~~	~~1,726~~	~~0.62~~	~~B or Better~~
~~NW 25th Street~~									
~~NW 117th Avenue to NW 107th Avenue~~	~~D~~	~~4L~~	~~1,800~~	~~16,000~~	~~2.18%~~	~~17,742~~	~~777~~	~~0.43~~	~~B or Better~~
~~NW 107th Avenue to NW 97th Avenue~~	~~D~~	~~4L~~	~~1,800~~	~~35,000~~	~~1.04%~~	~~36,818~~	~~1,613~~	~~0.90~~	~~D~~
~~NW 97th Avenue to NW 87th Avenue~~	~~D~~	~~6L~~	~~2,710~~	~~52,000~~	~~0.94%~~	~~54,449~~	~~2,386~~	~~0.88~~	~~D~~
~~NW 87th Avenue to SR 826~~	~~D~~	~~6L[7]~~	~~2,710~~	~~46,000~~	~~1.08%~~	~~48,491~~	~~2,125~~	~~0.78~~	~~C~~
~~NW 12th Street~~									
~~NW 107th Ave. to NW 97th Avenue~~	~~D~~	~~4L~~	~~1,800~~	~~24,000~~	~~1.30%~~	~~25,561~~	~~1,120~~	~~0.62~~	~~B or Better~~
~~NW 97th Ave. to NW 87th Avenue~~	~~D~~	~~4L~~	~~1,800~~	~~26,000~~	~~1.25%~~	~~27,628~~	~~1,211~~	~~0.67~~	~~B or Better~~
~~NW 87th Avenue to SR 826~~	~~D~~	~~4L~~	~~1,800~~	~~36,000~~	~~0.12%~~	~~36,223~~	~~1,587~~	~~0.88~~	~~D~~
~~NW 107th Ave~~									
~~NW 12th Street to NW 25th Street~~	~~D~~	~~6L~~	~~2,710~~	~~48,000~~	~~0.80%~~	~~49,913~~	~~2,187~~	~~0.81~~	~~C~~
~~NW 25th Street to NW 41st Street~~	~~D~~	~~6L~~	~~2,710~~	~~37,000~~	~~1.29%~~	~~39,387~~	~~1,726~~	~~0.64~~	~~B or Better~~
~~NW 41st Street to NW 58th Street~~	~~D~~	~~4L~~	~~1,800~~	~~25,000~~	~~2.35%~~	~~27,931~~	~~1,224~~	~~0.68~~	~~B or Better~~
~~NW 58th Street to NW 74th Street~~	~~D~~	~~4L~~	~~1,800~~	~~13,000~~	~~2.35%~~	~~14,524~~	~~636~~	~~0.35~~	~~B or Better~~
~~NW 97th Ave~~									
~~NW 12th Street to NW 25th Street~~	~~D~~	~~4L~~	~~1,720~~	~~14,000~~	~~1.49%~~	~~15,010~~	~~659~~	~~0.38~~	~~B or Better~~
~~NW 25th Street to NW 41st Street~~	~~D~~	~~4L~~	~~1,720~~	~~15,000~~	~~1.73%~~	~~16,298~~	~~714~~	~~0.42~~	~~B or Better~~
~~NW 41st Street to NW 58th Street~~	~~D~~	~~4L~~	~~1,720~~	~~17,000~~	~~1.77%~~	~~18,505~~	~~811~~	~~0.47~~	~~B or Better~~
~~NW 87th Ave~~									
~~NW 12th Street to NW 25th Street~~	~~E[4]~~	~~6L~~	~~2,710~~	~~46,000~~	~~0.44%~~	~~47,018~~	~~2,060~~	~~0.76~~	~~C~~
~~NW 25th Street to NW 41st Street~~	~~E[4]~~	~~6L~~	~~2,710~~	~~38,000~~	~~0.21%~~	~~38,408~~	~~1,683~~	~~0.62~~	~~B or Better~~
~~NW 41st Street to NW 58th Street~~	~~E[4]~~	~~4L~~	~~1,800~~	~~25,000~~	~~1.89%~~	~~27,359~~	~~1,199~~	~~0.67~~	~~B or Better~~
~~NW 79th Ave~~									
~~NW 25th St. to NW 41st St/36th St.~~	~~D~~	~~4L~~	~~1,720~~	~~15,000~~	~~0.29%~~	~~15,214~~	~~667~~	~~0.39~~	~~B or Better~~
~~NW 41st St./36th St. to NW 58th St.~~	~~E[4]~~	~~4L~~	~~1,720~~	~~14,000~~	~~2.28%~~	~~15,594~~	~~683~~	~~0.40~~	~~B or Better~~

~~Source:~~
~~1. Miami-Dade County Comprehensive Development Master Plan.~~
~~2. FDOT 2002 Quality/Level of Service Handbook Table 4-7.~~
~~3. Corridors that have transit service with less than 20-minute headways have an adopted LOS of E.~~
~~4. State Urban Minor Arterials have an adopted LOS of E.~~
~~5. Premium transit proposed along these corridors in the future. Hence adopted LOS is E+20.~~
~~6. V/C ratio categories to determine current LOS were obtained from Miami-Dade County.~~
~~7. Programmed widening to 6 lanes on NW 25th St. between NW 87th Ave. and SR 826 per FDOT 2006-2010 Work Program.~~

Long-Term (2030) Projected Traffic Conditions. The peak hour/peak direction traffic volumes and levels of service anticipated in 2030 are summarized in *Table 2-8*.

Table 2-8
Future 2030 Roadway Levels of Service

Roadway Segment	Adopted LOS[1]	Number of Lanes	Peak Hour/ Peak Direction Capacity[2]	2006 AADT	Growth Rate	2030 AADT Projection	2030 Volume (Peak Hour/Peak Direction)	V/C Ratio[3]	2030 LOS
SR 836 (Dolphin Expressway)									
107th Avenue to 87th Avenue	E+20[5]	12L-D	12,850	146,000	2.31%	252,815	10,839	0.84	E+20
87th Avenue to SR 826	E+20[5]	12L-D	12,850	97,500	1.55%	140,937	11,182	0.87	D
SR 826 (Palmetto Expressway)									
SR 836 to NW 25Street	E+20[5]	10L-D	10,620	205,000	0.63%	238,197	8,491	0.80	C
NW 25th Street to NW 41st Street/ 36th Street	E+20[5]	10L-D	10,620	157,000	0.71%	186,213	6,638	0.63	B or Better
NW 41st Street/ 36th Street to NW 58th Street	E+20[5]	10L-D	10,620	175,500	1.03%	224,477	8,002	0.75	C
SR 821 (Florida's Turnpike/)									
SR 836 to NW 41st St/ 36th St	D	10L-D	10,480	91,400	3.87%	227,507	13,181	1.26	F
NW 41st St/ 36th St to NW 74th St	D	10L-D	10,480	91,400	3.36%	201,879	11,696	1.12	F
North of NW 74th St	D	10L-D	10,480	91,400	2.46%	163,892	9,495	0.91	D
NW 58th Street									
NW 117th Avenue to NW 107th Avenue	D	4L-D	1,767	13,000	1.58%	18,950	830	0.47	B or Better
NW 107th Avenue to NW 97th Avenue	D	4L-D	1,767	18,000	2.39%	31,739	1,391	0.79	C
NW 97th Avenue to NW 87th Avenue	D	4L-D	1,767	35,000	1.34%	48,169	2,111	1.19	F
NW 87th Avenue to SR 826	D	4L-D	1,767	32,000	0.97%	40,321	1,767	1.00	E
NW 41st Street/ NW 36th Street									
Heft to NW 107th Avenue	D	6L-D	2,790	42,000	1.03%	53,681	2,352	0.84	D
NW 107th Avenue to NW 97th Avenue	D	6L-D	2,790	44,000	1.15%	57,841	2,535	0.91	D
NW 97th Avenue to NW 87th Avenue	D	6L-D	2,790	54,000	1.13%	70,746	3,100	1.11	F
NW 87th Avenue to SR 826	E[6]	6L-D	2,790	39,000	0.21%	41,022	1,798	0.64	B or Better
NW 25th Street									
NW 117th Avenue to NW 107th Avenue	E[6]	4L-D	1,800	16,000	3.59%	37,321	1,635	0.91	D
NW 107th Avenue to NW 97th Avenue	E[6]	4L-D	1,800	35,000	1.25%	47,191	2,068	1.15	F
NW 97th Avenue to NW 87th Avenue	E[6]	6L-D	2,710	52,000	1.11%	67,825	2,972	1.10	F
NW 87th Avenue to SR 826	E[6]	6L-D	2,710	46,000	1.32%	62,990	2,760	1.02	F
NW 12th Street									
NW 107th Ave. to NW 97th Avenue	D	4L-D	1,800	24,000	1.66%	35,649	1,562	0.87	D
NW 97th Ave. to NW 87th Avenue	D	4L-D	1,800	26,000	1.58%	37,898	1,661	0.92	E
NW 87th Avenue to SR 826	D	4L-D	1,800	36,000	0.13%	37,108	1,626	0.90	D
NW 107th Ave									
NW 12th Street to NW 25th Street	E[6]	6L-D	2,710	48,000	0.91%	59,728	2,617	0.97	E
NW 25th Street to NW 41st Street	E[6]	6L-D	2,710	37,000	1.72%	55,688	2,440	0.90	D
NW 41st Street to NW 58th Street	E[6]	4L-D	1,800	25,000	4.14%	66,125	2,898	1.61	F
NW 58th Street to NW 74th Street	D	4L-D	1,800	13,000	3.53%	29,857	1,308	0.73	C
NW 74th Street to NW 90th Street	D	4L-D	1,800	(4)		24,563	1,076	0.60	B or Better
NW 97th Ave									
NW 12th Street to NW 25th Street	D	4L-D	1,800	14,000	1.99%	22,439	983	0.55	B or Better
NW 25th Street to NW 41st Street	D	4L-D	1,800	15,000	2.47%	26,952	1,181	0.66	B or Better
NW 41st Street to NW 58th Street	D	4L-D	1,800	17,000	2.56%	31,156	1,365	0.76	C
NW 58th Street to NW 74th Street	D	4L-D	1,800	(4)		28,239	1,237	0.69	B or Better
NW 74th Street to NW 90th Street	D	4L-D	1,800	(4)		26,843	1,176	0.65	B or Better
NW 87th Ave									
NW 12th Street to NW 25th Street	E[6]	6L-D	2,710	46,000	0.48%	51,555	2,259	0.83	D
NW 25th Street to NW 41st Street	E[6]	6L-D	2,710	38,000	0.22%	40,080	1,756	0.65	B or Better
NW 41st Street to NW 58th Street	E[6]	6L-D	2,710	25,000	2.82%	48,764	2,137	0.79	C
NW 79th Ave									
NW 25th Street to NW 36th Street	D E	4L-D	1,800	15,000	0.30%	16,112	706	0.39	B or Better
NW 36th Street to NW 58th Street	E[7]	4L-D	1,800	14,000	1.38%	19,472	853	0.47	B or Better
NW 74th Street									
SR 821 to NW 107th Ave	D	6L-D	2,710	(4)		50,511	2,213	0.82	D
NW 107th Ave to NW 97th Ave	D	6L-D	2,710	(4)		48,768	2,137	0.79	C
NW 90th Street									
NW 107th Ave to NW 97th Ave	D	4L-D	1,800	(4)		6,724	295	0.16	B or Better
NW 97th Ave to NW 87th Ave	D	4L-D	1,800	(4)		17,155	752	0.42	B or Better

Source:
1. Miami-Dade County Comprehensive Development Master Plan.
2. FDOT 2002 Quality/Level of Service Handbook Table 4-7.
3. V/C ratio categories to determine current LOS was obtained from Miami-Dade County.
4. 2030 model volumes used to project 2030 peak-hour peak-direction due to unavailability of existing counts.
5. Premium transit proposed along these corridors in the future. Hence adopted LOS is E+20.
6. State Urban Minor Arterial in 2030, adopted LOS is E. For County roadways, LOS lowered to E for transit service.
7. Corridors that have transit service with less than 20-minute headways have an adopted LOS of E.

~~Based on the described traffic forecasting methodology, many of the major roadways within the City are projected to operate below their adopted level of service standard in 2030 as shown in *Table 2-8*.~~

~~Anticipated development and redevelopment within the City of Doral was quantified assuming the allocation of land uses based on the proposed FLUM at maximum densities and intensities associated with each land use category. The maximum densities and intensities were assumed even for the already built-out portions of the City. Hence the socio-economic data and the resulting traffic volumes were significantly (approximately 2X) higher than would be realistically anticipated with a FLUM change. Another aspect of the analysis that is overly conservative is the assumption that full build out at the maximum levels will occur in 25 years. Therefore, the projected volumes are significantly higher than realistically expected. Despite, these two factors the City is proactively establishing strategies and identifying improvements to address the projected deficiencies.~~

~~In August 2005, the City of Doral adopted a Transportation Master Plan for the community to address transportation system deficiencies and provide options for maintaining mobility within the City. The TMP focuses on all modes of transportation, including truck traffic, which greatly affects the City's roadways from nearby mining areas. The Transportation Master Plan recommends 27 different projects to address roadway LOS deficiencies within the City. Funding for these projects are anticipated from the Miami-Dade County Peoples Transportation Plan and the FDOT District VI Adopted Transportation Improvement Program. Projects specifically identified in the Transportation Master Plan are summarized in the City's Capital Improvements Element Data Inventory and Analysis Report. The Strategies recommended in the TMP to address capacity and/or deficiencies within the City are listed below:~~

- ~~Obtain People's Transportation Plan (PTP) funding for roadway improvements ($700,000 per year).~~
- ~~Construct Haul Road to provide a segregated route for trucks.~~
- ~~Assign 25th Street as a voluntary truck route to segregate automobile and truck traffic.~~
- ~~Support construction of the 25th Street Viaduct from the Miami International Airport to the Florida Turnpike (HEFT) for truck traffic.~~
- ~~Develop Doral Heavy Truck Movement/Mobility Study.~~
- ~~Implement a peak hour truck prohibition program.~~
- ~~Complete a comprehensive signal timing study to synchronize signals to provide a better progression of traffic citywide.~~
- ~~Appoint a transportation liaison to coordinate and manage transportation issues in the City by working with citizens, developers, and regional and state agencies.~~
- ~~Develop a concurrency management system to track concurrency to monitor traffic and LOS impacts.~~
- ~~Implement transportation demand management strategies to provide options for moving people, especially strategies offered by South Florida Commuter Services.~~
- ~~Participate in LRTP Projects through proactive coordination with Miami-Dade County Metropolitan Planning Organization (MPO) and the FDOT.~~
- ~~Implement level of service improvements at major intersections.~~
- ~~Develop a local municipal transit/shuttle service to serve local trips and connect to the MDT regional transit service.~~

- ~~Enhance pedestrian connections to transit and improve the sidewalk network.~~
- ~~Develop park and ride lots within City to support transit use.~~
- ~~Construct linear parks on available rights-of-way to provide facilities for bicyclists and pedestrians.~~
- ~~Develop an access management plan for the City to enhance LOS on major corridors.~~
- ~~Maximize capacity of Section Line, ½ section, and ¼ section roads to enable maximum vehicular mobility.~~
- ~~Acquire additional right-of-way on NW 25th Street.~~
- ~~Examine feasibility of implementing roundabouts along NW 41st Street at NW 97th Avenue and NW 87th Avenue.~~
- ~~Implement a traffic calming program to reduce speeds in residential areas.~~
- ~~Construct a Turnpike interchange at NW 25th Street to provide increased access.~~

~~The TMP and its more than 20 recommended strategies and improvements have been incorporated into the Transportation Element. The TMP strategies will improve traffic conditions on the City roadways. However, the limitation of the FSUTMS model precludes the ability to quantify the impact of a majority of these strategies. For example, the transportation demand management and transportation system management strategies have a significant impact on traffic patterns and travel behavior; but, it is not possible to accurately quantify the traffic reduction using the model.~~

~~Miami-Dade County and/or the FDOT maintain jurisdiction over the majority of roadways to operate below the adopted LOS including: the Florida Turnpike (HEFT), Palmetto Expressway, Dolphin Expressway, and other "section line" and "half section line" roads running through the City. As such, officials in Doral will need to coordinate with State and County officials to consider policy decisions and/or target capital improvements to address deficiencies on these facilities. Additional funding needed to implement future policies or projects identified by the City Council, Miami-Dade County or FDOT could be raised by assessing local impact fees on new development or with funding from the Miami-Dade County People's Transportation Plan.~~

~~In addition to the strategies recommended in the TMP, and in cooperation with other appropriate public and private agencies, the City is adopting the following strategies to address mobility:~~

- ~~Work with MDT to study existing transit routes within the City and determine the feasibility of providing new service along heavily traveled corridors within Doral as shown in Table 5.~~
- ~~Work with MDT to study existing transit routes within the city and determine the feasibility of improving service time (i.e. shorter headways) within Doral as shown in Table 5.~~
- ~~Work with Miami-Dade County, Miami-Dade MPO, and FDOT to provide the following capacity improvements on:~~
    - ~~Widen NW 58th Street from NW 97th Avenue to SR 826 to 6 lanes~~
    - ~~Widen NW 41st/36th Street from NW 97th Avenue to NW 87th Avenue to 8 lanes~~
    - ~~Widen NW 25th Street from NW 107th Avenue to NW 97th Avenue to 6 lanes~~

- ~~Widen NW 25th Street from NW 97th Avenue to SR 826 to 8 lanes~~
- ~~Widen NW 107th Ave from NW 41st Street to NW 58th Street to 8 lanes.~~

- ~~Lower the adopted LOS on streets within Doral from D to E by increasing transit coverage and reducing the headways to less than 20 minutes.~~
- ~~Formally designate a Transportation Management Initiative (TMI) to mitigate peak hour traffic impacts through demand-side strategies such as van pooling, flexible work hours, or ridesharing programs.~~
- ~~Program roadway and/or intersection capacity improvements at key intersections within the City.~~
- ~~Program improvements to include bicycle facilities that could encourage bicycling as a viable transportation option.~~
- ~~Program improvements to include pedestrian facilities that could encourage walking as a viable transportation option.~~

~~Together, these strategies will begin to mitigate some of the transportation system deficiencies identified in the long-range planning horizon (2030) projections. *Table 2-9* indicates the 2030 LOS conditions with the above-mentioned improvements. The City will continue to monitor and address the LOS through the annual Capital Improvements Element updates and its future Evaluation and Appraisal Reports. The following policy will be added to the Goals, Objectives, and Policies of the Transportation Element:~~

> ~~*Policy 2.2.11: The City will continue to monitor the LOS on segments that are projected to operate lower than their adopted LOS in 2030. By 2025, the City will program the recommended improvements into the Capital Improvements Plan through coordination with FDOT and Miami-Dade MPO.*~~

~~Improving roadway capacities by widening the congested roads has been proven to be a short-term solution and it may actually encourage additional "through traffic" to the area. Once the carrying capacity of a roadway is increased three types of convergence occurs on the improved roadway: (1) many drivers who formerly used alternative routes during peak hours switch to the improved roadway (spatial convergence); (2) many drivers who traveled just before or after the peak hours start traveling during the peak hours (time convergence); and (3) some commuters who used to take public transportation during peak hours now switch to driving, since it has become faster (mode convergence) (Anthony Downs, "Stuck in Traffic – Coping with Peak-Hour Traffic Congestion", 1992). Hence it is recommended that the City coordinate with the regional agencies to identify other means to address LOS, including targeted physical improvements at key intersections, increasing transit service, improving bicycle and pedestrian facilities, transportation demand management strategies and, transportation system management strategies to improve traffic conditions in the future.~~

~~Table 2-9~~
~~Proposed/Planned and Recommended Improvements for Future~~
~~Impact on 2030 Roadway Levels of Service~~

~~Roadway Segment~~	~~Adopted LOS[1]~~	~~Number of Lanes~~	~~Peak Hour/ Peak Direction Capacity[2]~~	~~2006 AADT~~	~~Growth Rate~~	~~2030 AADT Projection~~	~~2030 Volume (Peak Hour/Peak Direction)~~	~~V/C Ratio[3]~~	~~2030 LOS~~
~~SR 836 (Dolphin Expressway)~~									
~~107th Avenue to 87th Avenue~~	~~E+20[5]~~	~~12L D~~	~~12,850~~	~~146,000~~	~~2.31%~~	~~252,815~~	~~10,839~~	~~0.84~~	~~E+20~~
~~87th Avenue to SR 826~~	~~E+20[5]~~	~~12L D~~	~~12,850~~	~~97,500~~	~~1.55%~~	~~140,937~~	~~11,182~~	~~0.87~~	~~D~~
~~SR 826 (Palmetto Expressway)~~									
~~SR 836 to NW 25Street~~	~~E+20[5]~~	~~10L D~~	~~10,620~~	~~205,000~~	~~0.63%~~	~~238,197~~	~~8,491~~	~~0.80~~	~~C~~
~~NW 25th Street to NW 41st Street / 36th Street~~	~~E+20[5]~~	~~10L D~~	~~10,620~~	~~157,000~~	~~0.71%~~	~~186,213~~	~~6,638~~	~~0.63~~	~~B or Better~~
~~NW 41st Street / 36th Street to NW 58th Street~~	~~E+20[5]~~	~~10L D~~	~~10,620~~	~~175,500~~	~~1.03%~~	~~224,477~~	~~8,002~~	~~0.75~~	~~C~~
~~SR 821 (Florida's Turnpike/)~~									
~~SR 836 to NW 41st St/ 36th St~~	~~D~~	~~10L D~~	~~10,480~~	~~91,400~~	~~3.87%~~	~~227,507~~	~~13,181~~	~~1.26~~	~~F~~
~~NW 41st St/ 36th St to NW 74th St~~	~~D~~	~~10L D~~	~~10,480~~	~~91,400~~	~~3.36%~~	~~201,879~~	~~11,696~~	~~1.12~~	~~F~~
~~North of NW 74th St~~	~~D~~	~~10L D~~	~~10,480~~	~~91,400~~	~~2.46%~~	~~163,892~~	~~9,495~~	~~0.91~~	~~D~~
~~NW 58th Street~~									
~~NW 117th Avenue to NW 107th Avenue~~	~~D~~	~~4L D~~	~~1,767~~	~~13,000~~	~~1.58%~~	~~18,950~~	~~830~~	~~0.47~~	~~B or Better~~
~~NW 107th Avenue to NW 97th Avenue~~	~~D~~	~~4L D~~	~~1,767~~	~~18,000~~	~~2.39%~~	~~31,739~~	~~1,391~~	~~0.79~~	~~C~~
~~NW 97th Avenue to NW 87th Avenue~~	~~D E[8]~~	~~4L D 6L D[8]~~	~~2,710~~	~~35,000~~	~~1.34%~~	~~48,169~~	~~2,111~~	~~0.78~~	~~C~~
~~NW 87th Avenue to SR 826~~	~~D E[8]~~	~~4L D 6L D[8]~~	~~2,710~~	~~32,000~~	~~0.97%~~	~~40,321~~	~~1,767~~	~~0.65~~	~~B or Better~~
~~NW 41st Street/ NW 36th Street~~									
~~Heft to NW 107th Avenue~~	~~D E[10]~~	~~6L D~~	~~2,790~~	~~42,000~~	~~1.03%~~	~~53,681~~	~~2,352~~	~~0.84~~	~~D~~
~~NW 107th Avenue to NW 97th Avenue~~	~~D E[10]~~	~~6L D~~	~~2,790~~	~~44,000~~	~~1.15%~~	~~57,841~~	~~2,535~~	~~0.91~~	~~D~~
~~NW 97th Avenue to NW 87th Avenue~~	~~D E[10]~~	~~6L D 8L D[10]~~	~~2,540~~	~~54,000~~	~~1.13%~~	~~70,746~~	~~3,100~~	~~0.88~~	~~D~~
~~NW 87th Avenue to SR 826~~	~~E[6]~~	~~6L D~~	~~2,790~~	~~39,000~~	~~0.21%~~	~~41,022~~	~~1,798~~	~~0.64~~	~~B or Better~~
~~NW 25th Street~~									
~~NW 117th Avenue to NW 107th Avenue~~	~~E[4]~~	~~4L D~~	~~1,800~~	~~16,000~~	~~3.59%~~	~~37,321~~	~~1,635~~	~~0.91~~	~~D~~
~~NW 107th Avenue to NW 97th Avenue~~	~~E[4]~~	~~4L D 6L D[11]~~	~~2,710~~	~~35,000~~	~~1.25%~~	~~47,191~~	~~2,068~~	~~0.76~~	~~C~~
~~NW 97th Avenue to NW 87th Avenue~~	~~E[4]~~	~~6L D 8L D[11]~~	~~3,500~~	~~52,000~~	~~1.11%~~	~~67,825~~	~~2,972~~	~~0.85~~	~~D~~
~~NW 87th Avenue to SR 826~~	~~E[4]~~	~~6L D 8L D[11]~~	~~3,500~~	~~46,000~~	~~1.32%~~	~~62,990~~	~~2,760~~	~~0.79~~	~~C~~
~~NW 12th Street~~									
~~NW 107th Ave. to NW 97th Avenue~~	~~E[12]~~	~~4L D~~	~~1,800~~	~~24,000~~	~~1.66%~~	~~35,649~~	~~1,562~~	~~0.87~~	~~D~~
~~NW 97th Ave. to NW 87th Avenue~~	~~E[12]~~	~~4L D~~	~~1,800~~	~~26,000~~	~~1.58%~~	~~37,898~~	~~1,661~~	~~0.92~~	~~E~~
~~NW 87th Avenue to SR 826~~	~~E[12]~~	~~4L D~~	~~1,800~~	~~26,000~~	~~0.13%~~	~~27,108~~	~~1,626~~	~~0.90~~	~~D~~
~~NW 107th Ave~~									
~~NW 12th Street to NW 25th Street~~	~~E[4]~~	~~6L D~~	~~2,710~~	~~48,000~~	~~0.91%~~	~~59,728~~	~~2,617~~	~~0.97~~	~~E~~
~~NW 25th Street to NW 41st Street~~	~~E[4]~~	~~6L D~~	~~2,710~~	~~37,000~~	~~1.72%~~	~~55,688~~	~~2,440~~	~~0.90~~	~~D~~
~~NW 41st Street to NW 58th Street~~	~~E[4]~~	~~4L D 8L D[11]~~	~~3,500~~	~~25,000~~	~~4.14%~~	~~66,125~~	~~2,898~~	~~0.83~~	~~D~~
~~NW 58th Street to NW 74th Street~~	~~D~~	~~4L D~~	~~1,800~~	~~13,000~~	~~3.53%~~	~~29,857~~	~~1,308~~	~~0.73~~	~~C~~
~~NW 74th Street to NW 90th Street~~	~~D~~	~~4L D~~	~~1,800~~	~~(4)~~		~~24,563~~	~~1,076~~	~~0.60~~	~~B or Better~~
~~NW 97th Ave~~									
~~NW 12th Street to NW 25th Street~~	~~D~~	~~4L D~~	~~1,800~~	~~14,000~~	~~1.99%~~	~~22,439~~	~~983~~	~~0.55~~	~~B or Better~~
~~NW 25th Street to NW 41st Street~~	~~D~~	~~4L D~~	~~1,800~~	~~15,000~~	~~2.47%~~	~~26,952~~	~~1,181~~	~~0.66~~	~~B or Better~~
~~NW 41st Street to NW 58th Street~~	~~D~~	~~4L D~~	~~1,800~~	~~17,000~~	~~2.56%~~	~~31,156~~	~~1,365~~	~~0.76~~	~~C~~
~~NW 58th Street to NW 74th Street~~	~~D~~	~~4L D~~	~~1,800~~	~~(4)~~		~~28,239~~	~~1,237~~	~~0.69~~	~~B or Better~~
~~NW 74th Street to NW 90th Street~~	~~D~~	~~4L D~~	~~1,800~~	~~(4)~~		~~26,843~~	~~1,176~~	~~0.65~~	~~B or Better~~
~~NW 87th Ave~~									
~~NW 12th Street to NW 25th Street~~	~~E[4]~~	~~6L D~~	~~2,710~~	~~46,000~~	~~0.48%~~	~~51,555~~	~~2,259~~	~~0.83~~	~~D~~
~~NW 25th Street to NW 41st Street~~	~~E[4]~~	~~6L D~~	~~2,710~~	~~38,000~~	~~0.22%~~	~~40,080~~	~~1,756~~	~~0.65~~	~~B or Better~~
~~NW 41st Street to NW 58th Street~~	~~E[4]~~	~~6L D~~	~~2,710~~	~~25,000~~	~~2.82%~~	~~48,764~~	~~2,137~~	~~0.79~~	~~C~~
~~NW 79th Ave~~									
~~NW 25th Street to NW 36th Street~~	~~D E~~	~~4L D~~	~~1,800~~	~~15,000~~	~~0.30%~~	~~16,112~~	~~706~~	~~0.39~~	~~B or Better~~
~~NW 36th Street to NW 58th Street~~	~~E[7]~~	~~4L D~~	~~1,800~~	~~14,000~~	~~1.38%~~	~~19,472~~	~~853~~	~~0.47~~	~~B or Better~~
~~NW 74th Street~~									
~~SR 821 to NW 107th Ave~~	~~E[13]~~	~~6L D~~	~~2,710~~	~~(4)~~		~~50,511~~	~~2,213~~	~~0.82~~	~~D~~
~~NW 107th Ave to NW 97th Ave~~	~~E[13]~~	~~6L D~~	~~2,710~~	~~(4)~~		~~48,768~~	~~2,137~~	~~0.79~~	~~C~~
~~NW 90th Street~~									
~~NW 107th Ave to NW 97th Ave~~	~~D~~	~~4L D~~	~~1,800~~	~~(4)~~		~~6,724~~	~~295~~	~~0.16~~	~~B or Better~~
~~NW 97th Ave to NW 87th Ave~~	~~D~~	~~4L D~~	~~1,800~~	~~(4)~~		~~17,155~~	~~752~~	~~0.42~~	~~B or Better~~

~~Source:~~

1. ~~Miami-Dade County Comprehensive Development Master Plan.~~
2. ~~FDOT 2002 Quality/Level of Service Handbook Table 4-7.~~
3. ~~V/C ratio categories to determine current LOS was obtained from Miami-Dade County.~~
4. ~~2030 model volumes used to project 2030 peak-hour peak-direction due to unavailability of existing counts.~~
5. ~~Premium transit proposed along these corridors in the future. Hence adopted LOS is E+20.~~
6. ~~State Urban Minor Arterial in 2030, adopted LOS is E. For County roadways, LOS lowered to E for transit service.~~
7. ~~Corridors that have transit service with less than 20-minute headways have an adopted LOS of E.~~
8. ~~NW 58th Street experiences high traffic volumes due to its proximity to SR 826/Palmetto Expressway. It is recommended that the roadway be widened to a six-lane facility to accommodate future traffic volumes. City officials should coordinate with Miami-Dade County, Miami-Dade MPO, and FDOT to discuss the provisions for widening this facility.~~
9. ~~NW 58th Street is currently served by Miami-Dade Transit regional bus service (Routes 87 & 242) on a two-block area west of the SR 826 interchange. City officials should coordinate with Miami-Dade Transit for expanding the route up to NW 117th Avenue and decreasing headways to 20 minutes or less when the current LOS standard of D is no longer maintained. Once implemented, the improved transit service would allow the acceptable LOS standard of this roadway to become E.~~

10. ~~NW 41st Street/NW 36th Street is currently served by Miami-Dade Transit regional bus service (Routes36, 95, 132 & 242) on various segments between SR 826 and NW 97th Avenue. City officials should coordinate with Miami-Dade Transit for expanding some of the routes up to NW 117th Avenue and decreasing headways to 20 minutes or less when the current LOS standard of D is no longer maintained. Once implemented, the improved transit service would allow the acceptable LOS standard of this roadway to become E.~~
11. ~~NW 25th Street experiences high traffic volumes due to its proximity to SR 836/Dolphin Expressway. It is recommended that the roadway be widened to a six-lane facility to accommodate future traffic volumes. City officials should coordinate with Miami-Dade County, Miami-Dade MPO, and FDOT to discuss the provisions for widening this facility. It is also recommended that the City work with MDT officials to provide transit service with less than 20-minute headways.~~
12. ~~NW 25th Street between NW 97th Ave. and SR 826 is projected to operate at LOS F. The City will continue to monitor LOS on this segment and will widen to 8 lanes if needed.~~
13. ~~NW 107th Avenue experiences high traffic volumes due to its proximity to SR 826/Palmetto Expressway. According to the projected volumes this segment needs to be 8-laned to operate at the adopted LOS. It is recommended that the roadway be widened to first a six-lane facility and then to an eight-lane facility if the future traffic volumes warrant the widening. City officials should coordinate with Miami-Dade County, Miami-Dade MPO, and FDOT to discuss the provisions for widening this facility.~~
14. ~~NW 12th Street experiences high traffic volumes due to its proximity to SR 836/Dolphin Expressway. This segment is not served by transit. City officials should coordinate with Miami-Dade Transit for providing service on this segment with headways of 20 minutes or less.~~
15. ~~NW 74th Street is projected to experience high traffic volumes and it will already be a six-lane roadway by 2030. This segment is not served by transit. City officials should coordinate with Miami-Dade Transit for providing service on this segment with headways of 20 minutes or less.~~
16. ~~NW 41st Street/NW 36th Street is projected to operate at LOS F. The City will continue to monitor LOS on this segment and will widen to 8 lanes if needed.~~
17. ~~NW 25th Street experiences high traffic volumes due to its proximity to SR 836/Dolphin Expressway. It is recommended that the roadway be widened to a six-lane facility to accommodate future traffic volumes. City officials should coordinate with Miami-Dade County, Miami-Dade MPO, and FDOT to discuss the provisions for widening this facility. It is also recommended that the City work with MDT officials to provide transit service with less than 20-minute headways.~~

~~**People's Transportation Plan.** The *People's Transportation Plan* (PTP) was introduced in 2002 and targets improvements throughout the County with funding from the half-cent sales tax referendum approved by Miami-Dade County voters. Doral currently does not receive any of the funding set aside for municipalities in Miami-Dade County from the half-cent sales tax because the City of Doral was incorporated after the PTP was introduced. In addition, because Doral is now a municipality in Miami-Dade County, it is no longer eligible to receive the share of funding designated for the unincorporated areas of Miami-Dade County either. The City of Doral should undertake the necessary steps to ensure it receives its fair share of funding for municipalities in Miami-Dade County.~~

~~Bus service improvements identified in the PTP to be implemented before 2008 include:~~

- ~~Adding mid-day, Saturday and Sunday services within 30 days of approval of a dedicated funding source using existing buses;~~
- ~~Providing 15-minute or better bus service during rush hour, 30-minute service or better during other periods and 24-hour service in certain major corridors; and~~
- ~~Expanding the bus shelter program~~

~~The following rail project is also included and is currently being implemented in the PTP:~~

- ~~East-West Multimodal Corridor: Includes a 10.5-mile segment From Florida International University (FIU) to the Miami Intermodal Center (MIC), which~~

~~runs just south of the SR 836 along the NW 7th Street corridor. Expected completion date is in FY 2014-2015.~~

~~Although this improvement is just south of the City of Doral, it will positively affect automobile congestion within the City. The City of Doral will actively work with members of MDT and the Citizens' Independent Transportation Trust to implement public transportation improvements within City limits.~~

~~**Existing and Projected Integrated Transportation System.** The City of Doral is served by a major thoroughfare system including SR 826 (Palmetto Expressway), SR 836 (Dolphin Expressway), and SR 821 (Florida Turnpike). In addition, eight Metrobus routes serve the area, which includes a Tri-Rail Shuttle connecting local residents with the Tri-Rail system for trips between Doral and destinations in Miami, Broward and Palm Beach Counties.~~

~~Looking to the future, the Transportation Master Plan recommendations will be completed for the City of Doral, providing mobility improvements. As such, improvements targeted for bicycle, pedestrian, and transit facilities within Doral have been identified to provide more balance to the existing transportation system.~~

~~The City of Doral has no airports, seaports, passenger rail lines, or dedicated inter-modal facilities within its municipal boundaries. However, Doral is directly west of the Miami International Airport and is approximately 14 miles west of the Port of Miami.~~

~~**Concurrency Management.** The City of Doral is in an area requiring concurrency management as mandated by the Miami-Dade County Comprehensive Plan and Section 163.3180 F.S. An essential requirement of the State's local government comprehensive planning law has termed the service "concurrency" requirement. Paraphrasing section 163.3202 of the Florida Statutes, each county and municipality must amend its land development code to incorporate specific and detailed provisions, which shall provide that public facilities and services meet or exceed the LOS standards established in the Capital Improvements Element, and are available when needed for the development, or that the development orders or permits are conditioned on the availability of these public facilities and services necessary to serve the proposed development. The term "development order" is defined in Chapter 163.3164 of the Florida Statutes to include any zoning action, subdivision approval, certification, permit, or any other official action of local government having the effect of permitting the development of land.~~

~~The City of Doral may issue many different types of development orders. These include zoning district boundary changes, variances, conditional uses, site plan approvals, environmental permits, and certificates of use and occupancy. At progressive stages in the development planning and approval process, concurrency determinations should be made with greater certainty.~~

~~Transportation Projects Planned by Other Jurisdictions.~~

~~*Florida Department of Transportation Projects.* The projects within the City of Doral that are included in the FDOT Adopted Transportation Improvement Program are shown in *Table 2-10*.~~

~~Table 2-10~~
~~Florida Department of Transportation Projects~~

~~Area~~		~~Project or Facility~~	~~Limits~~		~~Project Description~~	~~Years~~
			~~From~~	~~To~~		
~~Highway~~	~~Miami-Dade~~	~~NW 25 Street~~	~~NW 89 Court~~	~~SR 826~~	~~Add lanes & Reconstruct~~	~~N/A~~
	~~Miami-Dade~~	~~SR 826 & SR 836 Interchange~~	~~NW 87 Avenue~~	~~NW 57 Avenue~~	~~Interchange (Major)~~	~~N/A~~
	~~Miami-Dade~~	~~SR 826/Palmetto Expressway~~	~~I 75 South~~	~~SR 836~~	~~ITS Surveillance System~~	~~N/A~~
	~~Miami-Dade~~	~~SR 826/Palmetto Expressway~~	~~North of NW 25 St.~~	~~NW 47 Street~~	~~Add Lanes & Reconstruct~~	~~N/A~~
	~~Miami-Dade~~	~~SR 826/Palmetto Expressway~~	~~NW 62 Street~~	~~North of FEC Railroad~~	~~Add Lanes & Reconstruct~~	~~N/A~~
~~Turnpike~~	~~Miami-Dade~~	~~HEFT Trailblazing Upgrade~~	~~--~~	~~--~~	~~Signing/Pavement Markings~~	~~N/A~~
	~~Miami-Dade~~	~~HEFT Widening~~	~~SR 836~~	~~Okeechobee Plaza~~	~~Add Lanes & Rehabilitate Pavement~~	~~N/A~~
	~~Miami-Dade~~	~~HEFT/Turnpike Interchange~~	~~--~~	~~--~~		~~N/A~~
	~~Miami-Dade~~	~~NW 74 ST Interchange~~	~~--~~	~~--~~		~~N/A~~

~~*Metropolitan Planning Organization (MPO) Long Range Transportation Projects.* Fourteen projects within the City of Doral are currently included in the Miami-Dade Transportation Plan for the Year 2030. These projects are listed in *Table 2-11*.~~

~~Table 2-11~~
~~MPO Long Range Transportation Plan Projects~~

~~Area~~		~~Project or Facility~~	~~Limits~~		~~Project Description~~	~~Priority Level~~
			~~From~~	~~To~~		
~~Highway and Transit Projects~~	~~Central, Northwest, West~~	~~SR 826 & SR 836 Intersection~~	~~NW 87th Avenue~~	~~NW 57th Avenue~~	~~Widen Interchange to 10 Lanes~~	~~Priority I~~
	~~Northwest~~	~~SR 826~~	~~NW 25th Street~~	~~NW 47th Street~~	~~Add Lanes & Reconstruct (8 to 10 Lanes)~~	~~Priority I~~
	~~Northwest~~	~~NW 97th Avenue~~	~~NW 41st Street~~	~~NW 25th Street~~	~~2 to 4 Lanes~~	~~Priority I~~
	~~Northwest~~	~~NW 74th Street~~	~~HEFT~~	~~NW 82nd Avenue~~	~~New 3 Lane~~	~~Priority I~~
	~~Northwest~~	~~NW 58th Street~~	~~NW 107th Avenue~~	~~NW 102nd Avenue~~	~~2 to 4 Lanes~~	~~Priority I~~
	~~West, Northwest~~	~~NW 97th Avenue~~	~~--~~	~~--~~	~~Construct 4 Lane Bridge over SR 836~~	~~Priority I~~
	~~West, Northwest~~	~~SR 836 Extension~~	~~NW 111th Avenue~~	~~NW 87th Avenue~~	~~Improvements including a new bi-directional mainline toll plaza~~	~~Priority I~~
	~~Central, Northwest, West~~	~~SR 836 Express Lanes~~	~~HEFT~~	~~SR 826/836~~	~~4 Lane Divided Express Lanes in Median of SR 836~~	~~Priority I~~
	~~Beach/CBD, Northwest, West~~	~~NW 58th Street / NW 74th Street~~	~~HEFT~~	~~A1A~~	~~ITS (includes CCTV, Roadway Sensors, Arterial DMS, Wireless Communications)~~	~~Priority II~~
	~~Northwest~~	~~NW 87th Avenue~~	~~NW 36th Street~~	~~NW 58th Street~~	~~4 to 6 Lanes~~	~~Priority II~~
	~~Northwest~~	~~NW 97th Avenue~~	~~NW 58th Street~~	~~NW 74th Street~~	~~2 to 4 Lanes~~	~~Priority III~~
	~~Northwest~~	~~HEFT~~	~~At NW 74th Street~~		~~Interchange (Major)~~	~~Priority III~~
	~~Northwest~~	~~NW 107th Avenue~~	~~NW 41st Street~~	~~NW 25th Street~~	~~4 to 6 Lanes~~	~~Priority III~~

~~*Miami Dade County MPO Transportation Improvement Program (FY '04 to '08).* The projects within the City of Doral that are included in Miami-Dade County's adopted Transportation Improvement Program are shown in *Table 2-12*.~~

~~Table 2-12~~
~~MPO Transportation Improvement Program Projects~~

	~~Project or Facility~~	~~Limits~~		~~Project Description~~	~~Years~~
		~~From~~	~~To~~		
~~Highway~~	~~SR 826 & SR 836 Interchange~~	~~NW 87 Avenue~~	~~NW 57 Avenue~~	~~Interchange (Major) Widen to 10 Lanes~~	~~2004-2007~~
	~~SR 826/Palmetto Expressway~~	~~North of NW 25 Street~~	~~NW 47 Street~~	~~Add Lanes & Reconstruct 8 to 10 Lanes~~	~~2004-2006~~
	~~SR 826/Palmetto Expressway~~	~~SR 836~~	~~SR 93 / I 75~~	~~ITS Surveillance System~~	~~2005-2008~~
	~~HEFT~~	~~NW 74 St.~~	~~--~~	~~Interchange (Major)~~	~~2004-2007~~
~~MDX~~	~~SR 836 Express Lanes~~	~~HEFT~~	~~NW 37 Avenue~~	~~Provide 4 Lane Divided Express Lanes in the Median of SR 836 Connecting MIC, MIA, HEFT (South)~~	~~2004-2008~~
	~~SR 836 Extension - Toll Plaza~~	~~NW 111 Avenue~~	~~NW 87 Avenue~~	~~Provide Improvements from NW 107 Ave. to NW 87 Avenue, Including New Bi-Directional Mainline Toll Plaza~~	~~2004-2008~~
	~~SR 836 Westbound~~	~~SR 826~~	~~NW 57 Avenue~~	~~Add Auxiliary Lane in Westbound Direction~~	~~2004-2006~~
	~~SR 836 Communications and Incident Mgmt./Surveillance~~	~~HEFT~~	~~I 95~~	~~Install Communication System, Integrating FDOT with the MDX System~~	~~2004-2005~~

~~Adopted Levels of Service Standards for State and County Roads.~~ ~~Policy makers set the level of service standards for specific roadways as a means of maintaining a level of comfort and convenience for drivers. The South Florida Regional Planning Council and the FDOT recommend maintaining LOS D as the standard for roadways within the urbanized area of South Florida. However, the Metro-Miami-Dade Service Concurrency Management Program establishes different adopted level of service standards for portions of the County. The City of Doral recognizes the County's program for evaluating the traffic impacts to State and County roads that are associated with development applications inside City limits.~~

~~Multi-Agency Review of Development to Ensure Maintenance of Integrated Multimodal Transportation System, including LOS Standards.~~ ~~The City of Doral, through its Development Review Committee, will establish and maintain a continuing technical review and coordination mechanism involving the Miami-Dade County MPO, FDOT and adjacent municipalities to further the objectives, policies, and programs related to the maintenance of an integrated multimodal regional transportation system that is consistent with adopted level of service standards.~~

~~Internal Consistency within the Comprehensive Plan.~~ ~~This element was developed in concert with the other elements of the City of Doral Comprehensive Plan, particularly the Future Land Use Element. As noted throughout this element, the analysis of the future transportation system was based upon the vision of the City as expressed within the goals, objectives, and polices of the Comprehensive Plan and the distribution and intensity of land uses reflected on the Future Land Use Map (FLUM).~~

DATA, INVENTORY, AND ANALYSIS

INTRODUCTION

This section presents the updated Data, Inventory and Analysis (DIA) for the housing sector in Doral. It is a key component of the Housing Element contained in the City's adopted Comprehensive Plan, providing technical and analytical support for the Goals, Objectives and Policies part of the Element. The population and housing data presented herein are ~~is~~ drawn primarily from the 2020 ~~2010~~ U.S. Census and official Census estimates, which are the best available ~~best-available~~ sources.

When the City's original Comprehensive Plan was adopted in 2006, it contained an extensive Housing DIA report, which is available through the Doral Planning and Zoning Department, and remains as part of the DIA support for the Comprehensive Plan and its Housing Element. This 2025 ~~2015~~ DIA section is intended to provide updated housing-related information for the 2025-2035 ~~2006-2015~~ period, drawing heavily, as mentioned previously, on 2020 ~~2010~~ Census data, and official projections and estimates.

POPULATION CHARACTERISTICS

The City's official total population estimates and projections are contained in the Future Land Use Element DIA. ~~The 2010 U.S. Census represented the first official count of Doral's total population since its 2003 incorporation and showed the City was home to 45,709 residents. That figure has now grown significantly to an estimated 55,660 persons in 2015; a 21.7% increase. The City's population is expected to grow strongly over the next 5 years to 71,282 in 2020, a 28% increase.~~ In the 2020 U.S. Census, there were 75,874 residents. This represents a 66% increase from the 2010 U.S. Census, which counted 45,704 residents. The growth momentum has continued to increase with an estimated 2025 population of 86,615 residents of a 14.15% increase.

TABLE 4-1: POPULATION PROJECTIONS, 2020-2050

2020	2025	2030	2035	2040	2045	2050
75,874	86,615	99,083	110,124	120,175	129,730	138,904

Sources: Estimates and projections by Shimberg Center for Housing Studies, based on 2010 and 2020 U.S. Census data and population projections by the Bureau of Economic and Business Research, University of Florida.

Looking at Doral's socio-economic characteristics in 2020 ~~2010~~, Table 4-2 ~~5~~ presents the age of the population. The median age was 37 ~~34~~ years, which is considered relatively "young" among cities. This is verified by the fact that 27% ~~31%~~ of City residents were under 20 years of age, while those 65 years and older comprise only 9% ~~6%~~ of the ~~201b~~ population. However, 18% of the population is within the retirement zone between the ages of 50 and 64. This is a major increase since the last update of this plan, to which only 7% of the population was within retirement age. This is a similar trend to other municipalities in South Florida that have seen an increase in middle to late aged residents.

TABLE 4-2: AGE OF POPULATION

Age Range	Population	Percent
Total Population	86,615 ~~45,704~~	100.0
Under 5 years	5,205 ~~3,512~~	6.0% ~~7.7~~
5 to 9 years	5,613 ~~3646~~	6.5% ~~8.0~~
10 to 14 years	5,706 ~~3689~~	6.6% ~~8.1~~
15 to 19 years	6,438 ~~3272~~	7.4% ~~7.2~~
20 to 24 years	5,769 ~~2620~~	6.7% ~~5.7~~
25 to 29 years	6,096 ~~3060~~	7.0% ~~6.7~~
30 to 34 years	6,990 ~~3989~~	8.1% ~~8.7~~
35 to 39 years	7,639 ~~4781~~	8.8% ~~10.5~~
40 to 44 years	2,025 ~~4612~~	2.3% ~~10.1~~
45 to 49 years	6,414 ~~3915~~	7.4% ~~8.6~~
50 to 54 years	6,375 ~~2517~~	7.4% ~~5.5~~
55 to 59 years	4,941 ~~1828~~	5.7% ~~4.0~~
60 to 64 years	4,235 ~~1502~~	4.9% ~~3.3~~
65 to 69 years	2,863 ~~1052~~	3.3% ~~.3~~
70 to 74 ~~yei;iers~~ years	1,998 ~~755~~	2.3% ~~1.7~~
75 years and over ~~to 79 years~~	3,288 ~~494~~	3.8% ~~1.1~~
~~80 to 84 years~~	~~282~~	~~.6~~
~~85 years and over~~	~~178~~	~~.4~~
Median age (years)	37.0 ~~34.0~~	~~(x)~~

Source: ~~2010 U.S. Census.~~ Estimates and projections by Shimberg Center for Housing Studies, based on 2010 and 2020 U.S. Census data and population projections by the Bureau of Economic and Business Research, University of Florida.

Table 4-3 ~~6~~ below shows the ~~racial breakdown~~ demographic composition by race of the City~~'~~'s population. White/Caucasian residents comprise ~~88.7%~~ 54.6% of the population. The next largest racial group would be those who identify with two or more races, this represent 2/3rds (34.3%) of the total population. ~~The next~~ The following ~~most prevalent~~ racial categories are Asian, with ~~3.6%~~ 2.3% of the total, and Black or African Americans, accounting for ~~2.5%~~ 0.7%. Native Americans and Pacific Islanders make up less than 0.1% of the population.

TABLE 4-3 ~~6~~: POPULATION BY RACE

Race Category	# of in Population	Percent
One Race	50,274	65.7%
Two or More Races	26,216	34.3%
White/Caucasian	41,787	54.6%
Black/African American	541	0.7%
Native American	94	>0.1%
Asian	1,757	2.3%
Native Hawaiian or Pacific Islander	20	>0.1%
Some Other Race	6,075	7.9%

Source: 2023: ACS 5-Year Estimates Data Profiles. Table DP05. U.S. Census Bureau.

~~Race Category~~	~~Population~~	~~Percent~~
~~Total Population~~	~~45,704~~	~~100~~
~~One Race~~	~~44,755~~	~~97.9~~
~~White~~	~~40,552~~	~~88.7~~
~~Black or African American~~	~~1,139~~	~~2.5~~
~~American Indian and Alaska Native~~	~~57~~	~~.1~~
~~Asian~~	~~1,633~~	~~3.6~~
~~Native Hawaiian and Other Pacific Islander~~	~~7~~	~~0.0~~
~~Some Other Race~~	~~1,367~~	~~3.0~~

The ethnicity of Doral's population is largely ~~decidedly~~ Hispanic or Latino with that group comprising 85.3% ~~79.5%~~ of the City's residents as shown in Table 4-4 ~~7~~. The Hispanic/Latino population identifies with several different heritages. The number of p~~P~~ersons listing their ethnic heritage as Cuban accounts for 6,966 ~~5,806~~ or 9.1% ~~12.7%~~ of the population, ~~and~~ those listing Puerto Rican account for 3.2%. ~~, 4.9%.~~ And those listing Mexican account for 1.4%. Residents with Hispanic or Latino heritage, but not of Mexican, Puerto Rican, or Cuban descent, make up ~~make-up 59.4%~~ 71.6% of Doral's population. This is a large difference from the last Comprehensive Plan, which labeled 59.4% of Hispanic/Latino residents as not claiming Cuban, Puerto Rican, or Mexican heritage. This highlights the changes in immigration trends seen in the last two decades.

TABLE 4-4 ~~7~~: HISPANIC OR LATINO POPULATION

Hispanic or Latino	# of Population	Percent
Hispanic/Latino (of any race)	65,286	85.3%
Mexican	1,069	1.4%
Puerto Rican	2,481	3.2%
Cuban	6,966	9.1%
Not Hispanic or Latino	11.222	14.7%

Source: 2023: ACS 5-Year Estimates Data Profiles. Table DP05. U.S. Census Bureau

	~~Population~~	~~Percent~~
~~Hispanic or Latino~~		
~~Total Population~~	~~45,704~~	~~100~~
~~Hispanic or Latino (of any race)~~	~~36,344~~	~~79.5~~
~~Mexican~~	~~1,152~~	~~2.5~~
~~Puerto Rican~~	~~2,238~~	~~4.9~~
~~Cuban~~	~~5,806~~	~~12.7~~
~~Other Hispanic or Latino (5)~~	~~27,148~~	~~59.4~~
~~Not Hispanic or Latino~~	~~9,360~~	~~20.5~~

~~*Source: 2010 U.S. Census.*~~

~~In 2010, the City had 15,244 households and the average household sizewas 3.0 persons. Table 8 shows that plus additional interesting household statistics. Households with a husband-wife family account for 58.3% of the City's total households, while 50.7% contain 1 or more children c1nd 13.9% have individuals 65 years old and over.~~

As shown in Table 4-5, in 2023, the City had approximately 27,430 housing units. This represents a 55% increase in the number of housing units since the last update. Of the 27,430 housing units, approximately 90.9% are occupied and 9.1% are vacant.

TABLE 4-5 ~~8~~: HOUSEHOLDS

Housing Units	# of Units	Percent
Total Housing Units	27,430	100%
Occupied Housing Units	24,922	90.9%
Vacant Housing Units	2,508	9.1%

Source: 2023: ACS 5-Year Estimates Data Profiles. Table DP04. U.S. Census Bureau

~~Households by Type~~	~~Population~~	~~Percent~~
~~Total households~~	~~15,244~~	~~100~~
~~Family households~~	~~12,111~~	~~79.4~~
~~Husband-wife family~~	~~8,890~~	~~58.3~~
~~Male householder, no wife present~~	~~863~~	~~5.7~~
~~Female householder, no husband present~~	~~2,358~~	~~15.5~~
~~Nonfamily households (7)~~	~~3,133~~	~~20.6~~
~~Male~~	~~1,155~~	~~7.6~~
~~Female~~	~~1,113~~	~~7.3~~
~~Households with individuals under 18 years~~	~~7,729~~	~~50.7~~
~~Households with individuals 65 years and over~~	~~2,112~~	~~13.9~~
~~Average household size~~	~~3.00~~	~~(x)~~
~~Average family size~~	~~3.33~~	~~(x)~~

Table 4-6 ~~9~~ presents the occupancy characteristics of Doral's housing stock. Doral can be identified as a family-oriented City, with 60% of the households consisting of spouses residing together, and close to 20% of householders living with other relatives. ~~In 2010, the City had a total of 17,785 housing units and 85.7% were occupied. It should be remembered that 2010 was a low point in what has been termed the country's "Great Recession" and thus the 14.3% in vacant units should be viewed as an aberration in the longer term. Normally, housing vacancy ranges between 4-8% in most years and that has been the case typically in Doral.~~

TABLE 4-6: OCCUPANCY CHARACTERISTICS

Living Arrangements by Type	# of Population	Percent
Lives Alone	3,479	6.1%
Householder Living With Spouse or Spouse of Householder	29,639	60.0%
Householder Living With Unmarried Partner or Unmarried Partner of Householder	3,223	5.6%
Child of Householder	7,727	13.5%
Other Relatives	11,063	19.4%
Other Nonrelatives	1,941	3.4%

Source: 2023: ACS 5-Year Estimates Data Profiles. Table B09021. U.S. Census Bureau

TABLE 4-7 ~~9~~: HOUSING OCCUPANCY

Housing Occupancy	Total Number	Percent
Average Household Size	3.04 (3 persons)	-
Occupied Housing Units	24,922	90.1%
Vacant Housing Units	2,508	9.1%
Owner-Occupied Units	11,164	44.8%
Renter-Occupied Units	13,758	55.2%
Owner Vacancy Rate	1.3	-
Renter Vacancy Rate	5.6	-

Source: 2023: ACS 5-Year Estimates Data Profiles. Table DP04. U.S. Census Bureau

~~Housing ecoupancy~~	~~Population~~	~~Percent~~
~~Total housing units~~	~~17,785~~	~~100~~
~~Occupied housing units~~	~~15,244~~	~~85.7~~
~~Vacant housing units~~	~~2,541~~	~~14.3~~
~~For rent~~	~~528~~	~~3.0~~
~~Rented, not occupied~~	~~18~~	~~0.1~~
~~For sale only~~	~~329~~	~~1.8~~
~~Sold, not occupied~~	~~61~~	~~0.3~~
~~For seasonal, recreational, or occasional use~~	~~935~~	~~5.3~~
~~All other vacant~~	~~670~~	~~3.8~~
~~Homeowner vacancy rate~~	~~3.7%~~	~~(x)~~
~~Rental vacancy rate~~	~~7.1%~~	~~(x)~~

~~*Source: 2010 U.S. Census.*~~

1. Age of Housing Stock

~~Doral is a relatively 'new' city in terms of its housing stock.~~ The City, like many other municipalities in Florida, has a young housing stock. Table 4-8 ~~10~~ contains the estimated age of houses based on Census information. It's estimated that 80% of the City's housing stock was constructed between 1990 and 2020 ~~2010~~. However, there are some older units. It is estimated that 56 ~~46~~ units were built before 1940 and an additional 120 ~~100~~ units were built in the 1950s. Most of these oldest units are located in the Vanderbilt Park neighborhood situated near NW 25th Street and NW 97th Avenue.

TABLE 4-8 ~~10~~: AGE OF HOUSING STOCK

Year Built Range	# of Housing Units	Percent
Total:	27,430	-
Built 2020 or later	969	3.53%
Built 2010 to 2019	9,268	33.79%
Built 2000 to 2009	6,964	25.39%
Built 1990 to 1999	5,569	20.30%
Built 1980 to 1989	3,151	11.49%
Built 1970 to 1979	1,205	4.39%
Built 1960 to 1969	120	0.44%
Built 1950 to 1959	120	0.44%
Built 1940 to 1949	8	0.03%
Built 1939 or earlier	56	0.20%

Source: 2023: ACS 5-Year Estimates Data Profiles. Table B25034. U.S. Census Bureau

~~Year Built Range~~	~~Housing Units~~
~~Total Units:~~	~~17,702~~
~~Built 2010 or later~~	~~391~~
~~Built 2000 to 2009~~	~~8,360~~
~~Built 1990 to 1999~~	~~5,863~~
~~Built 1980 to 1989~~	~~1,913~~
~~Built 1970 to 1979~~	~~858~~
~~Built 1960 to 1969~~	~~171~~
~~Built 1950 to 1959~~	~~100~~
~~Built 1940 to 1949~~	~~0~~
~~Built ;1.939 or earlier~~	~~46~~

~~*Source: 2_011-2013 American Community Survey 3-year estimates, U.S. Census, 2015*~~

The balance of owner-occupied and renter-occupied housing is an important indicator of a community's shelter health. Table 4-9 ~~11~~ provides a snapshot of this factor for Doral. Owner-occupied units totaled 44.4% ~~55.1%~~ of the City's 76,490 ~~15,244~~ occupied housing while rentals comprised 55.7% ~~44.9%~~.

TABLE 4-9 ~~11~~: OWNER & RENTER OCCUPIED UNITS

Housing Tenure	# of Housing Units	Percent
Total:	76,490	-
Owner-occupied	33,927	44.35%
Renter-occupied	42,563	55.65%
Owner-occupied housing units	11,164	-
Average household size of owner-occupied units	2.63	-
Renter-occupied housing units	13,758	-
Average household size of renter-occupied units	2.26	-

Source: 2023: ACS 5-Year Estimates Data Profiles. Table B25008, Table B25009. and Table B25010. U.S. Census Bureau

~~Housing Tenure~~	~~Units~~	~~Percent~~
~~Occupied housing units~~	~~15,244~~	~~100~~
~~Owner-occupied housing units~~	~~8,395~~	~~55.1~~
~~Population in owner-occupied housing units~~	~~25,417~~	~~(x)~~
~~Average household size of owner-occupied units~~	3.~~03~~	~~(x)~~
~~Renter-occupied housing units~~	~~6,849~~	~~44.9~~
~~Population in renter-occupied housing units~~	~~20,281~~	~~(x)~~
~~Average household size of renter-occupied units~~	~~2.96~~	~~(x)~~

~~*Source: 2011-2013 American Community Survey 3-year estimates, U.S. Census, 2015*~~

2. Housing Affordability

Trying to match the cost of housing with the income level of a community's population is one of the most challenging issues facing cities in Florida and around the country. In determining housing affordability, households spending 30% or more of their income on shelter are considered "cost burdened" while those spending 50% or greater for housing are classified as "severely cost-burdened."

Tables 4-10 ~~12~~ and 4-11 ~~13~~ below provide the ratio of housing cost-to-income for Doral's renters and owners based on Census (2023) ACS 5-Year Estimates ~~survey estimates in 2011-13~~. For renters (Table 4-10 ~~12~~), 66% ~~60%~~ of households spent 30% or more of their incomes for housing and thus were "cost-burdened," while 42% of owners (Table 4-11 ~~13~~) paid 30% or more. For all households, 56% ~~50.7%~~ paid more than 30% of income for housing. Of "severely cost burdened" households, 36% ~~25.7%~~ were renters and 20% ~~24.3%~~ were owners.

TABLE 4-10 ~~12~~: GROSS RENT AS A PERCENTAGE OF HOUSEHOLD INCOME

Rent Income Percent Range	Households
Total:	13,758
Less than 10.0 percent	90
10.0 to 14.9 percent	429
15.0 to 19.9 percent	1,039
20.0 to 24.9 percent	1,576
25.0 to 29.9 percent	1,256
30.0 to 34.9 percent	818
35.0 to 39.9 percent	984
40.0 to 49.9 percent	1,984
50.0 percent or more	4,844
Not computed	738

Source: 2023: ACS 5-Year Estimates Data Profiles. Table B25070. U.S. Census Bureau.

~~Rent Income Percent Range~~	~~Households~~
~~Total:~~	~~6,926~~
~~Less than 10.0 percent~~	~~84~~
~~10.0 to 14.9 percent~~	~~301~~
~~15.0 to 19.9 percent~~	~~611~~
~~20.0 to 24.9 percent~~	~~691~~
~~25.0 to 29.9 percent~~	~~663~~
~~30.0 to 34.9 percent~~	~~780~~
~~35.0 to 39.9 percent~~	~~476~~
~~40.0 to 49.9 percent~~	~~1,131~~
~~50.0 percent or more~~	~~1,786~~
~~Not computed~~	~~403~~

~~*Source: 2011-2013 American Community Survey 3-year estimates, U.S. Census 2015*~~

TABLE 4-11 ~~13~~: MONTHLY OWNER COSTS AS PERCENTAGE OF HOUSEHOLD INCOME

Cost to Income Percent Range	Units
Total:	**11,164**
Housing units with a mortgage:	7,430
Less than 10.0 percent	407
10.0 to 14.9 percent	887
15.0 to 19.9 percent	808
20.0 to 24.9 percent	867
25.0 to 29.9 percent	791
30.0 to 34.9 percent	593
35.0 to 39.9 percent	543
40.0 to 49.9 percent	432
50.0 percent or more	2,050
Not computed	52
Housing units without a mortgage:	3,734
Less than 10.0 percent	1,010
10.0 to 14.9 percent	625
15.0 to 19.9 percent	454
20.0 to 24.9 percent	324
25.0 to 29.9 percent	93
30.0 to 34.9 percent	149
35.0 to 39.9 percent	69
40.0 to 49.9 percent	200
50.0 percent or more	627
Not computed	183

~~*Source: 2023: ACS 5-Year Estimates Data Profiles. Table B25091. U.S. Census Bureau.*~~

~~Cost-to=Income Percent Range~~	~~Units~~
~~Total:~~	~~7,714~~
~~Housing Units with a mortgage:~~	~~5,727~~
~~Less than 10.0 percent~~	~~238~~
~~10.0 to 14.9 percent~~	~~637~~
~~15.0 to 19.9 percent~~	~~668~~
~~20.0 to 24.9 percent~~	~~775~~
~~25.0 to 29.9 percent~~	~~609~~
~~30.0 to 34.9 percent~~	~~473~~
~~35.0 to 39.9 percent~~	~~242~~
~~40.0 to 49.9 percent~~	~~481~~
~~50.0 percent or more~~	~~1573~~
~~Not computed~~	~~31~~
~~Housing Units without a mortgage:~~	~~1,987~~
~~Less than 10.0 percent~~	~~584~~
~~10.0 to 14.9 percent~~	~~336~~
~~15.0 to 19.9 percent~~	~~255~~
~~20.0 to 24.9 percent~~	~~35~~
~~25.0 to 29.9 percent~~	~~104~~
~~30,0 to 34.9 percent~~	~~59~~
~~35.0 to 39.9 percent~~	~~97~~
~~40.0 to 49.9 percent~~	~~20~~
~~50.0 percent ormore~~	~~299~~
~~Not computed~~	~~198~~

~~*Source: 2011-2013 American Community survey 3-year estimates, U.S. Census 2015*~~

3. Workforce Housing

As can be seen from the previous subsection, affordable housing need is a critical issue in Doral and the Miami metropolitan area in general. A key component of this issue where a city like Doral can have the largest impact is in the provision of affordable housing for its workforce. Workforce housing is generally defined as housing affordable to families and persons making between 60% ~~65%~~ and 140% of ~~median family~~ of the area median income (AMI) according to the U. S, Department of Housing and Urban Development. According to the Census (2023) ACS 5-Year Estimates, the median family income is estimated to be $101,495 ~~$49,900~~. Thus, using the income percentage range above, workforce housing in Doral should be affordable to families with income between $60,900 ~~$32,400~~ and $142,100 ~~$69,900~~.

One important method to encourage the construction of workforce housing is with the selected use of density bonuses. It is recommended such bonuses be made available to developers on parcels With high-density residential or mixed-use land use and zoning. A density bonus of 30% should be considered with the developer required to provide 2/3 of the bonus units on site as workforce housing if the bonus is approved by the City Council. In addition, the workforce units should be affordable across the full range of family incomes in the 60 ~~65~~-140% AMI range.

INNOVATIVE HOUSING DESIGN

Cities can also help facilitate the provision of affordable and workforce housing options by allowing creative and innovative housing options for smaller families and single persons such as:

- Allowing live-work units within mixed-use areas;
- Permitting single-room occupancy units as part of a diverse housing mix;
- Encouraging accessory dwelling units (ADUs);
- Reducing minimum residential floor area requirements;
- Expanding density bonus programs;
- Providing expedited permitting processes; and
- Reducing or waiving permit fees.
- Live-work units in mixed use areas;
- Single-room occupancy as part of development mix;
- Accessory apartments;
- Reduced minimum residential floor area regulations;
- Expansion of density bonus program;
- Expedited permitting; and/or
- Reduced permit fees.

Each of these options is currently incorporated into the goals, objectives and policies of the Housing Element either for direct implementation and/or future feasibility study.

DATA, INVENTORY, AND ANALYSIS

PURPOSE

The purpose of the Infrastructure Element is to identify and ensure provision of adequate public facilities and services to support the future population and development projected within the Future Land Use Element of the City of Doral Comprehensive Development Master Plan (CDMP). The objective of the Infrastructure Element Data, Inventory, and Analysis (DIA) Report is to inventory and evaluate existing sanitary sewer, solid waste, natural groundwater aquifer recharge, potable water, and drainage resources within the City of Doral. In addition, the DIA Report determines the projected demands on these facilities and resources given future service demands and facility levels of service to adequately serve the projected demand. Within the Infrastructure Element, each of the public facilities and/or resources mentioned above is treated as separate sub-elements in the document. Together, this information serves as the foundation for goals, objectives, and policies of the Infrastructure Element. Data and analysis for each of the five sub-elements contained within the Infrastructure Element DIA is provided in the following order:

- Sanitary sewer;
- Solid waste, natural groundwater aquifer recharge areas;
- Potable water; and
- Drainage.

SANITARY SEWER SUBELEMENT

Sanitary sewer facilities are 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.

Inventory of Existing Conditions

Treatment System and Geographic Service Area

The City of Doral does not maintain sanitary sewer facilities within its jurisdictional boundaries. Instead, the Miami-Dade County Water and Sewer Department (WASD) serves as the governing authority responsible for the collection, transmission, primary and secondary treatment, and pumping facilities in Doral. Although WASD provides sanitary sewer service for a majority of the City of Doral, portions of the city's sewer service areas remain isolated from WASD collection, transmission, and treatment systems. The parcels in this area are predominantly residential located on large lots. The sanitary sewage from these areas is presumed to be serviced by localized septic tanks. The majority of the City of Doral is located within the northwestern section of the WASD Central District Service Area and is served by the Central District Wastewater Treatment Plant (WWTP). ~~Map IV-1 illustrates the areas served by the Central District WWTP and Map IV-2 illustrates the location of areas in the city currently served by septic tanks.~~

The Central District WWTP is located at 3989 Rickenbacker Causeway, in the Virginia Key District, of the City of Miami, Florida. The facility was constructed in 1955 and handles demand generated by commercial, business, and the majority of the residential properties in the Central District of Miami-Dade County (including the City of Doral). Treated effluent is disposed through a series of deep injection wells and an outfall into the Atlantic Ocean; a percentage of the treated effluent is used onsite for landscaping of green areas and wash-down of buildings. The Central District WWTP has a design flow capacity of 143 million gallons per day (MGD) and is currently operating at 8~~0~~1 percent of capacity.

Service Areas

The Miami-Dade WASD serves the area within the City of Doral, between NW 90th Street to the north, State Road 836 to the south, State Road 826 to the west, and the Florida Turnpike to east. Most of the residential land use areas and a majority of commercial and office land use areas within the City of Doral are served by WASD. However, the portion of wastewater that is generated by single family residential and commercial land use in the western portion of the City of Doral is served by septic tanks.

~~TABLE 4-1. MIAMI-DADE COUNTY WASTEWATER PLANT FLOWS AND CAPACITIES (2002)~~

~~Treatment Plant~~	~~12-Month Average Flow (MGD)~~	~~Average Flow Design Capacity – Permitted (MGD)~~	~~Planned Capacity (MGD)~~
~~Central District~~	~~1141~~	~~143.0~~	~~143.0~~
~~North District~~	~~88.5~~	~~112.5~~	~~135.0~~
~~South District~~	~~90.9 112~~	~~97.0~~	~~131.3~~
~~Total~~	~~293.4~~	~~352.5~~	~~409.3~~

~~*Source: Miami-Dade County Water and Sewer Department, 2002*~~
~~*Note:1Central District Wastewater Treatment Plant, 2003*~~

Regional Facility Capacity

The Central District WWTP currently operates below its permitted capacity. The Average Annual Design Flow Capacity (AADFC) for the treatment plant is 11~~4~~6 MGD and the permitted design capacity for the treatment plant is 143 MGD. In addition, the 3 WASD wastewater treatment districts are combined into one distribution and collection system that serves Miami-Dade County residents and businesses. Therefore, the LOS reported by WASD is measured for the entire system. Table 4-1 summarizes the average daily flow and capacity for all 3 Miami- Dade Regional Wastewater Treatment Plants.

~~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 WASD 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 plant's operating capacity can remain in compliance with Miami-Dade County WASD and Florida Department of Environmental Protection (FDEP) standards.

Current Facility Demand

Current demand on the WASD system within the City of Doral is relatively moderate even though the majority of the City of Doral is connected to the county facilities. The majority of the properties within the county's service area are built out; therefore demand met by the current WASD system is expected to remain relatively constant into the near future. Additional demand for capacity may increase in areas where new residential and commercial development is anticipated pursuant to current subdivision regulations and/or in areas where the city enters into an agreement with the Miami- Dade County WASD to abandon existing septic tanks and to connect to the county collection system.

Sanitary Sewer Level-of-Service (LOS)

The majority of the land area within the City of Doral is connected to WASD's sanitary sewer system for wastewater treatment. Sanitary sewer facilities maintained by the Miami- Dade County WASD are subject to the level-of-service standards established in the Miami-Dade County Comprehensive Development Master Plan (CDMP):

~~System LOS The regional wastewater treatment and disposal system shall operate with a design capacity of two percent above Annual Average Daily Flow (AADF) for the proceeding year.~~

~~User LOS The system shall maintain the capacity to collect and dispose of 100 gallons of sewage per capita per day.~~

~~a) The wastewater treatment plants shall operate with a physical capacity of no less than the annual average daily influent sewage flow for the preceding 12 months.~~

~~b) Effluent discharged from wastewater treatment plants shall meet all federal, State, and County standards.~~

~~c) The system shall maintain the capacity to collect and dispose of no less than 102 percent of annual average daily influent sewage flow for the preceding 5 years accounting for reserved capacity. The maximum daily flow shall be determined by calculating the average of the highest five single day flows for the previous 12 months. The annual average daily influent sewage flow shall be calculated as the average of the daily volume received at the facility over a 12-month period.~~

~~d) The per capita Level of Service standard for sanitary sewer shall be 122 gallons per capita per day.~~

~~The Miami-Dade County WASD wastewater treatment system had trouble meeting both level of service standards established in the county's CDMP before 1994. Since that time, the system level of service standard has been maintained through a series of treatment plant expansions, re-ratings, and aggressive maintenance procedures to reduce water infiltration and inflow into the sewage treatment system.~~ The county's water infiltration and inflow program is expected to keep sewage treatment system demands within current projections into the future.

Septic Tanks

Septic tanks serve as a form of sanitary sewer collection, treatment, and disposal for some commercial and single family residential land uses within the City of Doral. Miami-Dade County discourages the use of septic tanks for sanitary sewer disposal. The county cites the vulnerability of the shallow Biscayne Aquifer to contamination from bacteria found in wastewater effluent infiltrating into groundwater as a result of aging and faulty septic tanks and the proximity of the water table as the primary reasons.

Miami- Dade County has been restricting septic tanks countywide since 1972. Furthermore, the use of septic tanks as a means for the disposal of domestic liquid waste is restricted within wellfield protection areas, as well as density restrictions for development on septic tanks and sewers are in effect within the Basic Protection Area west of the HEFT. Most of the land uses within wellfield protection areas are served by the sanitary sewer system, and land without such service are generally designated residential estate to try to maintain low densities to minimize potential harm to the aquifer.

The City of Doral currently does not have any wellfields identified within its jurisdictional boundaries. However, the western limits of the City of Doral lie within a wellfield protection zone. Therefore, septic tanks are not prohibited under the county's criteria, although there is considerable potential for contamination in the city, given the age of the existing septic tanks serving the area. Additional septic tanks should not be permitted for the disposal or discharge of industrial or other non-domestic waste, nor should they be permitted where a seasonally high water table will impair proper functioning. The city should coordinate with WASD to obtain an accurate account of all permitted septic tanks within its jurisdictional boundaries to evaluate the feasibility of eliminating active tanks in areas where connection to WASD's sanitary sewer system is practical. The first step in this process is for the city to enter into an agreement with Miami- Dade County WASD as discussed in the Intergovernmental Coordination Element. The process established through the interlocal agreement has continued to achieve the objective of limiting new septic tank permits that are issued and encourage septic tank abandonment within Miami- Dade County.

Sanitary System Analysis

The majority of the City of Doral utilizes the county's wastewater treatment system. The first measurement under the county's level of service 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 1995 to 2020, is presented in Table 4-2. According to the best available data, the capacity of the WASD sanitary sewer system will continue to exceed the 102 percent requirement through 2020~~.

~~TABLE 4-2. WASTEWATER SYSTEM CAPACITY AND DEMAND COMPARISON, 1995 - 2020~~

~~Year~~	~~Treatment Capacity (MGD)~~	~~102% of Previous Year's Average Daily Flow (MGD)~~
~~1995~~	~~427.60~~	~~396.78~~
~~2000~~	~~454.77~~	~~399.13~~
~~2005~~	~~495.03~~	~~451.55~~
~~2010~~	~~520.03~~	~~487.36~~
~~2015~~	~~563.03~~	~~517.34~~
~~2020~~	~~563.03~~	~~547.74~~

~~*Source: Miami-Dade County Adopted 2003 Evaluation and Appraisal Report, Water, Sewer, and Solid Waste Element*~~

~~The "user" portion of the county's adopted level of service standard is 100 gallons per capita per day. Based on 202000 Census data, Doral's current population of 20,438 75,874 generates approximately 10.5 2.04 MGD in wastewater impacts, or 0.45 1.8 percent of the countywide treatment capacity reported for the Year 2020.~~

Future Projects, Programs, and Policies

As mentioned earlier, the county's level of service standard will be maintained in the portions of the City of Doral served by the WASD wastewater collection system through the long range planning horizon based on the current system. To date, there are no sanitary sewer improvement projects programmed or planned by the City of Doral. However, based on the current system this could change if the city should enter into an agreement with WASD for replacing septic tanks.

The City of Doral relies heavily on the county to administer sanitary sewer services. The city's Infrastructure Element should include goals, objectives, and policies that emphasize the need to effectively coordinate with Miami- Dade County to ensure efficient provision of wastewater treatment for existing and future development within the City of Doral at adopted level of service standards.

Conservation Measures

Although discouraged, if areas in the city perform collection, transmission, and disposal of wastewater through the use of septic tanks, it is imperative that the action is in compliance with county, state, and federal policies. Generally, residential development in the city served by septic tanks ranges from one dwelling unit per acre (i.e., residential estate) to three dwelling units per acre (i.e., single family). The soil types evident throughout the single- family residential areas are classified as Peats and Mucks, Sands, and man-made lands. According to the Miami-Dade County Health Department, these soil types are deemed suitable for urban development, including the use of septic tanks.

Although the use of septic tanks in residential areas of the City of Doral does not appear to pose an immediate threat to public health, the city should adopt goals, objectives, and policies for reducing the proportion of residences and commercial establishments within the city using private wastewater treatment facilities. The primary concern associated with septic tanks is the possibility of surficial groundwater contamination from mishandling or structural deterioration of individual tanks. The City of Doral should coordinate with WASD and regional permitting agencies to develop long range plans that abandon the use of septic tanks over time and provide WASD sanitary sewer service to the entire city.

The city should implement wastewater system improvements pledged in agreements made between Miami-Dade County, FDEP, and the United States Environmental Protection Agency (EPA). The city should maintain a regular, ongoing inspection and repair program for existing sewers, and

schedule substandard collector systems for rehabilitation or replacement.

In providing improvements for the sanitary sewer collection system, the following additional criteria shall be considered:

1. Location within a public water supply wellfield protection zone.

2. Potential for the disposal of waste, other than domestic waste.

3. Designation of areas of the land use plan map for a use more intense than residential estate.

4. Potential for impacts on existing private wells.

5. Areas with low land elevation in conjunction with a high water table.

6. Proximity to existing sewer mains.

7. Existing moratoriums.

The City of Doral is encouraged to coordinate with the Miami- Dade County Wastewater Facilities Plan. The Plan is updated on a regular basis. The county maintains procedures to ensure that any facility deficiencies are corrected and that adequate capacity will be available to meet future demands.

SOLID WASTE SUBELEMENT

~~The Solid Waste section of the Infrastructure Element was established based upon the 2003 2017 Evaluation and Appraisal Report (EAR) for the Water, Sewer and Solid Waste Element of the Miami- Dade County CDMP. As a result, most of the information described below is new and baseline data was not always available. The best original data available was compared to current data in the evaluation.~~

~~Inventory of Existing Conditions~~

~~The Miami-Dade County Department of Solid Waste Management (DSWM) is responsible for the collection and disposal of commercial and single family residential solid waste generated within City of Doral. The county also provides curbside recycling service to its residential customers. Solid waste from non-residential and multifamily residential properties is collected by private waste haulers and disposed at one of many sites within Miami- Dade County contracted to receive these materials.~~

~~Geographic Service Area~~

~~The Miami-Dade County DSWM collects residential waste from unincorporated areas and all cities incorporated after February 1996, including the City of Doral. The county also maintains standards for the operation of private waste collection within its jurisdiction that serves primarily commercial and multifamily waste needs. There are five permitted facilities that generate a moderate amount of solid waste in the city, see Map IV-6. These sites generate a variety of solid waste materials that are disposed at the sites described below.~~

~~Solid Waste Disposal System~~

~~The Miami- Dade County DSWM currently operates three disposal sites, two transfer stations, and 14 neighborhood and trash recycle centers. The solid waste generated within the City of Doral is taken to either the Resource Recovery Facility (RRF), located between NW 74th Street and NW 58th Street, or the Miami- Dade County private disposal facility, located northeast of the RRF. Map IV-4 illustrates the components of the Miami-Dade County solid waste disposal system. The City of Doral should continue to coordinate with Miami- Dade County to ensure adequate collection and disposal of solid The RRF is owned by Miami- Dade County and operated under a management agreement by Montenay-Dade, Ltd., an affiliate of the Montenay Power Corporation. The RRF converts garbage and trash into refuse-derived fuel that is burned in boilers to produce steam that turns two turbine generators for making electricity. Energy produced from burning the fuel is enough to power the plant and supply the average power needs of 40,000 households per year. The Ash Landfill, located within the RRF facility, is the final disposal site for ashes produced by the RRF as well as ashes produced by a co- generation facility in Palm Beach County.~~

~~The most current information provided by DSWM indicates that on an average approximately 1.6 million tons of solid waste is generated within Miami- Dade County each year. The RRF is expected to receive 1.2 million tons of this waste with the remaining waste transferred to appropriate landfills. In addition to Miami- Dade Count y facilities, DSWM maintains disposal service contracts with two private disposal facilities in Broward County; Waste Management (up to 500,000 tons per year for 20 years) and Wheelabrator (up to 100,000 tons per year for 7 years). These supplemental arrangements allow for waste delivery flexibility, permitting Miami- Dade County the ability to maintain adequate capacity and meet concurrency requirements even as demand varies into the future.~~

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The City of Doral solid waste, recycling and yard waste collection is currently being handled by several companies known as private haulers. The City of Doral monitors the private haulers that operate within the City. They need to have a franchise to operate. The Miami-Dade County Solid Waste Management has neighborhood trash and recycling centers to do self disposal.

The City of Doral requires businesses engaging in the business of the collection of solid waste to obtain a franchise from the City of Doral Public Works Department and pay solid waste collection franchise fees. Please follow the link to download the guideline to apply online for the private hauler franchise.

Design Capacity of Disposal Facilities

~~The 2003 Miami- Dade County EAR documents the base design capacity and estimates the total number of years remaining for disposal facilities within Miami- Dade County, under the county's currently adopted level of service standard for solid waste service. Based on this information, the RRF is designed to process 23,192 tons of solid waste each week, or 1.206 million tons per year. The supporting ash landfill has a capacity of over 3.15 million tons and an estimated remaining lifespan of 18 years (as of 2003). The South Dade Landfill has capacity of 9.148 million tons and an estimated remaining lifespan of 29 years (as of 2003).~~

Current Demand on Solid Waste System

~~The Miami-Dade County DSWM estimates that approximately 2.9 million tons of waste was disposed during Fiscal Year 2002, including an estimated 538,924 tons disposed at non-Miami- Dade County facilities. In that same period, DSWM reports that 293,185 active residential accounts were maintained in Miami-Dade County. The current per capita waste generation rate for estimating demand on the solid waste system is 9.4 pounds per capita per day (FDEP). The 2004 population for the City of Doral represents approximately 30,031 tons of the annual solid waste generated in Miami-Dade County. This accounts for only 1.04 percent of the 2.9 million tons of waste generated in all of Miami- Dade County for Fiscal Year 2002.~~

Solid Waste Level of Service

~~Miami- Dade County's current level of service standard for solid waste facilities is to maintain solid waste disposal capacity sufficient to accommodate waste flows committed to the system through long-term agreements or service contracts with local municipalities as well as anticipated non-committed waste flows for a period of five years. Consistent with the county's level of service standard, the City of Doral will have to adopt a policy consistent with the minimum five year capacity standard as well as use the local generation rate from FDEP for estimating solid waste impacts.~~

~~In order to serve those areas where growth is encouraged and to discourage urban sprawl, the CDMP states that the county shall plan and provide for solid waste disposal services on a countywide basis projected in this element in conformance with the Future Land Use Element. In addition, the City of Doral and Miami-Dade County will need to continue implementing procedures to ensure that existing solid waste facility deficiencies are corrected and that adequate capacity will be available to meet future demands. The achievement of the adopted LOS standards will serve as their own monitoring measures. To meet this objective, the following measures are recommended:~~

- ~~The annual amount of waste processed at each county disposal facility.~~
- ~~The annual amount of waste disposed of at each county transfer facility.~~
- ~~The amount of waste processed at private disposal facilities or exported out of the county.~~

Recycling Efforts

~~Under the DSWM contract, residents within City of Doral participate in the county's curbside recycling program that was introduced in 1990. The program accepts newspaper, corrugated cardboard, aluminum, ferrous metals, glass containers, aseptic packages, plastic, household batteries, and telephone books. The program currently serves an estimated 317,000 households in the unincorporated areas and selected municipalities, including the City of Doral. Also, since 1992, commercial and multifamily establishments within Miami- Dade County are required to provide on-site recycling programs. The DSWM has been active in the education and enforcement aspects for implementing the recycle program. Through these and other programs, the county is moving forward with achieving compliance with the state's recycling goals. In 2001, the countywide recycling rate was reported at 20.3 percent. However, this is still below the minimum requirement of 30 percent set forth in Section 403.706(4)(a) of the Florida Statutes and enforced by FDEP.~~

~~TABLE 4-2. WASTEWATER SYSTEM CAPACITY AND DEMAND COMPARISON, 1995 - 2020~~

~~YEAR~~	~~Countywide Generation~~	~~Amount to Ashfill~~	~~Remaining Capacity~~
~~2000~~	~~1,610,000~~	~~163,000~~	~~2,848,000~~
~~2005~~	~~1,610,000~~	~~163,000~~	~~2,033,000~~
~~2010~~	~~1,610,000~~	~~163,000~~	~~1,218,000~~
~~2015~~	~~1,610,000~~	~~163,000~~	~~403,000~~

~~*Note: All figures are in tons per year.*~~
~~*Source: Miami-Dade County Department of Solid Waste Management, 1996*~~

Home Chemical Collection Program

The county operates a program to assist residents in disposing household hazardous wastes, such as pesticides, solvents, oil-based paints, auto fluids, and other home chemical materials. Home chemicals can be dropped off at the Permanent Home Chemical Collection Center located at 8831 NW 58th Street.

Projected Capacity and Demand

~~The projected solid waste generation in Miami-Dade County for the years 2000 through 2015 is reported in Table 4-3. This is the best available data from DSWM. In their projections, the DSWM estimates constant demand over the 15-year planning horizon at approximately 1.61 million tons of solid waste per year. This represents anticipated waste generated each year through contracts with municipalities and private haulers who have committed their waste flows to the system through agreements or long term contracts plus anticipated non-committed waste flows in accordance with the county's adopted level of service standard. This determination is contingent upon the continued ability of the county and its disposal service contract providers to obtain and renew disposal facility operating permits from applicable federal, state, and local agencies.~~

~~Using the county's level of service standard, capacity for the ash fill site should be sufficient to meet demand until 2013 with actual capacity not being reached until 2018. At the time the ash fill site is deemed full, DSWM has committed to transport ashes to the South Dade or North Dade Landfill for cover material.~~

~~Future Projects, Programs, and Policies~~

~~The county's solid waste level of service will be maintained through the planning period with operation of the countywide solid waste management system in Miami-Dade County. The ability of that system to meet future solid waste needs at the adopted LOS has been shown in this DIA Report. Since the system is entirely owned and operated by the county, no solid waste facilities or improvements are planned by the City of Doral. However, the city will need to coordinate with Miami- Dade County to educate its residents and businesses to encourage their active participation in the waste recycling and chemical collection programs.~~

NATURAL GROUNDWATER AQUIFER RECHARGE AREAS SUBELEMENT

The management of surface water and groundwater resources is an important issue to the long-term environmental quality within the City of Doral. It is generally recognized that many water management issues are addressed and regulated by either regional water management districts or other state and federal agencies. However, land use decisions made by the local government have the potential to impact natural resources, both positively and negatively, as vacant land is developed and the impacts to the environment are mitigated. As such, the City of Doral should regulate new development within its borders in conformance with best management practices that conserve natural groundwater aquifer recharge areas.

Identification of Prime Recharge Areas

The South Florida Water Management District (SFWMD) has not identified any areas within the City of Doral as prime groundwater recharge areas for the Biscayne Aquifer. However, the relatively low-density residential development pattern and vacant land does make portions of the City of Doral favorable to natural groundwater recharge. The city should coordinate with representatives of the Miami-Dade County Department of Environmental Resource Management (DERM) and SFWMD to determine whether any areas of the city could be considered as potential groundwater recharge areas.

Surficial Aquifer

The top of the surficial aquifer within the City of Doral is generally located between three and five feet below ground surface, but may be much closer depending upon the amount of rainfall. Rainfall generally recharges the surficial aquifer, and as such, the water table depth fluctuates with the amount and intensity of the rainfall in the area.

Major Natural Drainage Features

Major natural drainage features are typically defined as those that occur naturally in areas that accommodate the flow of stormwater, including streams, rivers, lakes, and wetlands. There are no significant natural drainage features located within the City of Doral. Most of the water resources within Doral are generally the result of man- made drainage systems, including the C-6 Drainage Basin.

The man- made drainage features within the City of Doral have been inventoried in the Drainage section of the Infrastructure Element and the Conservation Element. The City of Doral follows the stormwater management requirements set forth by both Miami-Dade County DERM and SFWMD, as they apply to the canal system. Generally, SFWMD is responsible for maintaining the larger canals while smaller tributaries within the drainage system are the responsibility of DERM. Typically, the drainage system is such that the smaller canals move runoff from the surrounding land area to SFWMD regional canals. Therefore, the likelihood for flooding is reduced when each new development is required to retain a portion of new run-off on site. This also increases the available capacity for local and regional canals.

Existing Natural Drainage and Recharge Area Regulations and Programs.

Additional federal, state, county, and local regulations or programs impacting development and/or resource conservation within the City of Doral are discussed in the following sections.

Federal Regulations

Section 208 of the Federal Water Pollution Control Act (PL92-500, 1972) serves as the directing federal law with respect to water pollution abatement. In implementing the Act, the US EPA identified pollutants carried in stormwater runoff as a major source of water contamination. To achieve the pollution abatement goals of the Act, the EPA provided assistance to state and local governments for developing Area Wide Water Quality Management Plans, or "208 Plans" as they are commonly known. These 208 Plans study a broad range of potential water pollution sources, including stormwater, and focus on identifying pollutant sources and abatement needs as well as development of regulatory programs to ensure implementation.

The City of Doral is not currently in the process of submitting an application to the US EPA for certification under the National Pollutant Discharge Elimination System (NPDES). For information purposes, the application generally consists of:

- An inventory of stormwater facilities.
- A dry weather (non-stormwater) sampling program.
- Discharge characterization that includes stormwater flow sampling to document water quality parameters; pollutant load estimation; and long-term monitoring plans.
- A proposed management program that includes a description of structural and source control measures to reduce stormwater runoff pollutant loads; description

of a program for best management practices at construction sites; and an assessment of the potential effectiveness of these programs to reduce the pollutant load.

The information required for the application should be prepared as part of a stormwater master plan for the City of Doral. Once the city is awarded responsibility for development review and stormwater infrastructure, it should pursue becoming a part of Miami- Dade County's Application to the US EPA's NPDES Stormwater Permitting Program.

State Regulations

The FDEP has adopted a Stormwater Rule (Chapter 62-25, Florida Administrative Code (F.A.C.)) to fulfill part of the state's responsibilities under Section 208 of the Federal Water Pollution Control Act. The objective of the rule is to achieve 80 to 95 percent removal of stormwater pollutants before discharging it to receiving waters. Implementation of the stormwater rule is achieved through the permitting process. FDEP has delegated permitting responsibility to SFWMD and Miami- Dade County DERM. This rule requires treatment of the first one inch of runoff for sites less than 100 acres in size and the first 0.5 inch of runoff for sites over 100 acres in size. Treatment is generally

accomplished through retention or detention with filtration. Retention requires the diversion of the required volume of runoff to an impoundment area with no subsequent direct discharge to surface waters. Pollutants are removed by settling and by percolation of stormwater through soil. Detention facilities are typically within the line of flow for the drainage system. Stormwater from a site passes through the detention facility and is filtered to remove pollutants prior to discharge to a surface water body.

County Regulations

Miami- Dade County has an adopted 208 Pla n that is administered by DERM. Implementation of the plan is accomplished through the county's stormwater management permitting process.

Subdivision Regulations

These regulations establish standards for subdivision design that encourage and lead to the development of healthy environments.

Zoning Regulations

Zoning regulations, a flood damage prevention ordinance, and subdivision regulations accomplish an adequate degree of protection for natural drainage and groundwater recharge areas. These regulations define the type of development that may occur on a given site and provide performance standards governing the scale and design of development options. The zoning regulations also mandate minimum standards for preservation of open space as well as standards for maximum building coverage.

POTABLE WATER SUBELEMENT

This section evaluates the current potable water system serving the City of Doral and regional treatment facilities that serve the city. Potable water facilities typically include a system of structures designed to collect, treat, or distribute potable water and may include water wells, treatment plants, reservoirs, and distribution mains.

Inventory of Existing Conditions

Potable water facilities are defined in Rule 9J-5.003, F.A.C. as "a system of structures designed to collect, treat, or distribute potable water, and includes water wells, treatment plants, reservoirs and distribution mains."

Geographic Service Area

The City of Doral receives water service from Miami- Dade County WASD. The Biscayne Aquifer is the source of potable water in Miami-Dade County. The City of Doral is primarily served by the Hialeah-Preston Treatment Plant. WASD is responsible for maintaining the distribution and treatment facilities that serve the City of Doral. The city receives its potable water from WASD's water supply system, but a small percentage of residential properties may obtain potable water

for irrigation purposes via private wells. Wellfield protection areas are designated by the Miami- Dade County Department of Environmental Resources Management to protect groundwater that serves as the source of drinking water. Private wells are not included in wellfield protection areas.

Service Areas

The Miami- Dade County WASD serves the area within the City of Doral, between NW 90th Street to the north, State Road 836 to the south, State Road 826 to the east, and the Florida Turnpike to the west, comprised mostly of residential land uses. The majority of commercial and office land use areas within the Cit y of Doral are also served by the WASD system.

Potable Water Level of Service

The adopted Miami- Dade County CDMP establishes a level of service standard for potable water that contains four components as follows:

~~**Regional Treatment:** The regional treatment system shall operate with a rated capacity no less than two percent above the maximum daily flow for the preceding year.~~

~~**User LOS:** The system shall maintain the capacity to produce and deliver 200 gallons per capita per day.~~

~~**Water Quality:** Water quality shall meet all federal, state, and county primary standards for potable water.~~

~~**Countywide Storage Capacity:** Storage capacity for finished water shall equal no less than 15 percent of the countywide average daily demand.~~

To assure adequate level of service, potable water and sanitary sewer facilities shall meet the following level of service standards:

1) Potable Water Supply:

(a) potable water treatment system shall operate with a rated maximum daily capacity no less than 2 percent above the maximum daily flow for the preceding year accounting for capacity that is reserved for development that is not yet completed ("reserved capacity"), and no less than an average daily capacity 2 percent above the average daily system demand for the preceding 5 years accounting for reserved capacity. The maximum finished water daily flow shall be determined by calculating the average of the highest five single day finished water flows for the previous 12 months.20 pounds per square inch (psi) and no greater than 100 psi. Unless otherwise approved by the Miami-Dade Fire Rescue Department, Out of Cycle CDMP20220002 Ord. No. 23-6, Adopted 1-19-23. V-3 minimum fire flows based on the land use served shall be maintained as follows:

(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
Single Family Residential Estate	500
Single Family and Duplex; Residential on minimum lots of 7,500 sf	750
Multi-Family Residential (Low Medium Density);	1500
Semiprofessional Offices (Medium and High Density); Hospitals; Schools	2000
Business and Industry	3000

(c) Water quality shall meet all federal, state, and County primary standards for potable water.

(d) Countywide storage capacity for finished water shall equal no less than 15 percent of the Countywide average daily demand.

Regional Design Capacity

Potable water distributed by Miami- Dade County WASD to the City of Doral is treated using the lime-softening method. Information on potable water capacity from WASD is only available as it relates to the entire Miami- Dade County system. ~~In 2002, system wide water treatment plant capacity was 454.8 MGD, and peak water demand was 391.3 MGD. According to the latest Miami- Dade County EAR, the capacity of the WASD potable water system has met the county's LOS requirements for the last five years.~~

~~Regional Storage Capacity~~

~~Finished or treated water in the county is generally stored in ground reservoirs or elevated tanks, and storage systems are usually equipped with pumps and valves for operation. Finished water storage allows the system to meet domestic, industria l, and fire demands. WASD uses the finished water storage system to provide water during source or pump failures, as well. According to WASD, the finished water storage capacity standard of 15 percent has been met continuously since 1995. Finished water storage capacity of 93.8 million gallons was available at the Hialeah-Preston and Alexander Orr Water Treatment Plants in 2002, almost double the 15 percent specified in the LOS standard.~~

~~Minimum Fire Flows~~

~~Miami- Dade County requires water pressure between 20 and 100 pounds per square inch (psi) to be delivered to users, with a schedule of minimum fire flows based upon land uses served. Table 4-4 illustrates the minimum fire flows for various land uses. These fire flows are maintained by WASD on a system wide basis.~~

~~Existing and Projected Potable Water Demand~~

~~Based on the current population, expected population growth, and an average demand of 200 gallons per capita per day, the average demand for the City of Doral is calculated as shown in Table 4-5. The city should coordinate with WASD to ensure that the city's potable water demand is included in WASD's Water Supply Plan.~~

~~Existing and Projected Agricultural Water Demands~~

~~The City of Doral has limited agricultural uses; therefore, the existing and projected agricultural water demand is not a relevant issue regarding potable water demand.~~

~~Existing and Projected Commercial and Industrial Water Demands~~

~~Given the limited vacant land for expansion of commercial land uses, the City of Doral is not anticipating any substantial increase in water demands for commercial or industrial uses.~~

~~TABLE 4-4. MINIMUM FIRE FLOWS LOS~~

~~Land Use~~	~~Minimum Fire Flow (gal/min)~~
~~Single Family Residential/Estate~~	~~500~~
~~Single Family, Duplex, and Residential on minimum lots of 7,500 square feet~~	~~750~~
~~Multifamily Residential; and Semiprofessional Offices~~	~~1,500~~
~~Hospitals; Schools~~	~~2,000~~
~~Business; Industry~~	~~3,000~~

~~*Source: Miami-Dade County, 2002*~~

~~TABLE 4-5. EXISTING AND PROJECTED POTABLE WATER DEMAND FOR THE CITY OF DORAL~~

~~YEAR~~	~~POPULATION~~	~~POPULATION SERVED~~	~~GALLONS/CAPITA/DAY~~	~~AVERAGE DEMAND (MGD)~~
~~2000~~	~~21,000~~	~~21,000~~	~~200~~	~~4.20~~
~~2004~~	~~30,285~~	~~30,285~~	~~200~~	~~6.06~~
~~2005~~	~~33,633~~	~~33,633~~	~~200~~	~~6.73~~
~~2010~~	~~46,266~~	~~46,266~~	~~200~~	~~9.25~~
~~2015~~	~~59,323~~	~~59,323~~	~~200~~	~~11.7~~
~~2020~~	~~72,659~~	~~72,659~~	~~200~~	~~14.5~~

~~*Source: Kimley-Horn & Associates, Inc., 2004*~~

DRAINAGE SUBELEMENT

Inventory of Existing Conditions

Drainage facilities are defined in Rule 9J-5.003, F.A.C., as "a system of man- made structures designed to collect, convey, hold, divert, or discharge stormwater, and includes stormwater sewers, detention structures, and retention structures."

In 1987, the United States Congress established the Clean Water Act. Section 402(p) of that document mandated that the US EPA formulate a stormwater-permitting program. Under this mandate, the EPA promulgated stormwater regulations in 1990, establishing the NPDES. In the state of Florida, the DEP is the agency responsible for implementing the NPDES program. Under the NPDES program, FDEP requires each county in Florida to apply for, and meet the requirements of the Municipal Separate Storm Sewer System (MS4) Permit. These MS4 permits include municipalities, the Florida Department of Transportation, and Tribal Governments as co-permittees responsible for meeting permit requirements.

The City of Doral was incorporated in 2002. SFWMD and Miami- Dade County currently regulate and/or operate all stormwater management facilities and programs within the city's boundaries. The City of Doral has not yet become a co-permittee under the Miami-Dade County MS4 permit. However, the City of Doral is encouraged to prepare a stormwater master plan and evaluate taking control of this stormwater infrastructure. In preparation for assuming responsibility for stormwater infrastructure, the City of Doral will be required to become a co-permittee on the Miami- Dade County MS4 permit.

Drainage System Geographic Service Area

The City of Doral is located in the C-6 Canal Basin within Miami-Dade County. The boundaries of the C-6 Canal Basin have been delineated by the Miami- Dade County DERM and SFWMD. As part of the Miami- Dade County Stormwater Master Plan process, DERM divided the C-6 Basin into drainage sub-basins based on topography, land use, and drainage characteristics.

Types of Land Uses Served

The Future Land Use Element describes existing and projected land use, including a tabular profile and maps of existing and future land use. According to the existing land use map, the City of Doral is not completely built out and has potential for increased stormwater runoff and drainage problems with future development. The primary objective for the City of Doral's future stormwater master plan is to inventory the existing system and develop a plan to correct existing deficiencies.

~~Field Analysis~~

~~This section addresses runoff from residential and commercial areas, industrial sites, construction sites, and includes a program to eliminate illicit discharges and improper disposal of wastes into the storm sewer system. An assessment of the stormwater management system within the City of Doral shall be conducted in two phases.~~

- ~~**1st Phase.** This assessment will include a review of drainage complaints filed with Miami- Dade County~~

~~DERM, Miami- Dade County Public Works, and the City of Doral.~~

- ~~**2nd Phase.** This assessment will include an evaluation of drainage structures within the City of Doral. Geographic Information System (GIS) data provided by DERM will be used to locate and map the majority of the drainage structures which mostly consist of catch basins and exfiltration systems (i.e., french drains, trench drains). Approximately 200 of these structures will be chosen for field evaluation.~~

~~Potential Causes for Roadway Flooding~~

~~Some of the potential causes of roadway flooding that may be discovered during the drainage structure inventory are described below:~~

- ~~**Low areas without adequate infrastructure.** Areas in the City of Doral where ponding within the roadway is typical may consist of low areas with inadequate drainage infrastructure to convey water away from the roadway. This situation occurs most frequently at residential intersections, but there are some areas along the roadways where positive drainage does not exist.~~

- ~~**Clogged inlets and pipes.** The situation occurs when leaves and other debris accumulate on the surface of the drainage inlet covers, restricting the flow of water into the catch basin. Even when the asphalt apron and top of grate does not have debris on it, the bottom of the structure could be filled with leaves, dirt, and various forms of debris. Another potential problem is exfiltration trenches not permeating water through the structure efficiently due to excessive roots and debris within the trench.~~

- ~~**No baffles in exfiltration trench.** Grease and oil accumulation reduces the drainage effectiveness and lifespan of the exfiltration trench. The City of Doral shall ensure that any new storm basin installed will contain pollution retardant baffles to prevent the accumulation of grease and oil within the exfiltration trench.~~

- ~~**Future Development.** The intensity of future development (impervious areas) in the City of Doral is the primary measure to monitor the current level of service of the existing drainage system. Additional drainage structures and conveyance methods are vital to the overall stormwater management system that serves Doral.~~

Drainage System Analysis

Level-of-Service Standards

The City of Doral should adopt the following system wide drainage level-of-service standards for redevelopment and new development:

- **Water Quality Standard.** Stormwater facilities shall be designed to meet the design and performance standards established in Chapter 62-25, Rule 25.025, F.A.C., with treatment of the runoff from the first one inch of rainfall onsite to meet the water quality standards required by Chapter 62-302, Rule 862-302.500, F.A.C. Where two or more standards impact a specific development, the most restrictive standard shall apply:
  - Post-development runoff shall not exceed the pre-development runoff rate for a 25-year storm event, up to and including an event with 24-hour duration.
  - Treatment of the runoff from the first one inch of rainfall onsite or the first 0.5 inch of runoff from impervious areas, whichever is greater.

Basin Evaluations

As part of the stormwater master plan process, sub-basins will be selected as a priority for more detailed analysis. The development of the priority sub-basins will be based on several factors including:

1. Magnitude of observed flooding

2. Flood complaint records

3. City input

4. Condition of existing roadways

5. Proximity to other priority sub-basins

6. Relative traffic volumes on the affected roadways

7. Maintenance of system wide LOS standards

Based on the review of the drainage deficiencies identified during field analysis, the City of Doral will select several priority drainage sub-basins for more detailed analysis. The drainage sub-basins will be evaluated based on system wide LOS standards and the following performance goals:

Water Quality Treatment Performance Goals

The drainage basins that discharge into lakes should have water quality pretreatment equal to the volume of the first ½- inch of runoff. Drainage basins which discharge into the C-6 Canal should have water quality pretreatment equal to the greater volume of the first ½- inch of runoff or 2.5 times the percent impervious. This goal ensures that the drainage improvements meet federal, state, and county water quality pretreatment standards.

Water Quality Performance Goals

During the five-year return design storm event, the roadway local and collector travel lanes flooding should not exceed the crown of the road. This goal is consistent with the SFWMD basis of design criteria; but it is a higher standard than the Miami-Dade County requirement that collector and local streets be passable during the five-year storm event.

During the 10-year return design storm event, flooding of minor arterials should be below the crown of the roadway. This is a higher standard than the Miami-Dade County requirement that minor arterials (four- lane roads) be passable during the 10-year storm event. According to Miami-Dade County standards, the term "passable" means the depth of flooding should not exceed eight inches above the crown of road. During the 100- year return storm event, the flooding should be below the building finish floor elevations. This standard is the same as the current Miami-Dade County standard.

The calculations utilized to evaluate the performance goals will be based on the readily available information, which provides an overview of each area. The overview identifies if the areas have water quality pretreatment which meet current standards and if the area has a positive outfall of sufficient size to meet the hydraulic flooding performance goals. This analysis assumes that the runoff from each area has sufficient roadway slopes or storm drainage infrastructure to convey the stormwater runoff to the existing outfall structure. Because of the general nature of the study and the limited availability of survey information, the Master Plan will not provide a computer analysis of the effectiveness of stormwater conveyance within each drainage sub-basin or sub-basin area. The stormwater conveyance deficiencies within each sub-basin will be typically identified by the onsite observations made during significant storm eve nts and the complaints of the area.

Future Projects, Programs and Policies

Based on the foregoing analysis and maintenance of LOS standards, a five-year capital improvement plan for stormwater improvements will be developed to prioritize and provide the financial resources necessary to plan, construct, operate and maintain the city's stormwater management program. The proposed five- year capital improvement plan will be based on the findings of the assessment of existing drainage conditions within the City of Doral, and the detailed analysis of the sub-basins which were identified as priority basins. Funding for the proposed plan as an option can be generated from establishment of a City of Doral stormwater utility and subsequent enactment of a stormwater management fee citywide.

The capital improvement plan related to stormwater drainage is divided into two components: operation and maintenance and capital improvements.

Operation and Maintenance Plan

The intent of the operation and maintenance plan is to maintain the integrity of the stormwater system. This is accomplished by maintaining the existing stormwater system to provide the level-of-service as it was originally designed. To achieve this goal, periodic observations, routine maintenance and general improvements are required. This section is intended to provide some of the key components and allow sufficient budget to implement these items.

Street Sweeping. This procedure cleans intake structures, reduces debris deposition within the pipe network and contributes to the appearance of the City of Doral.

Primarily, street sweeping is a positive maintenance activity that provides measurable benefits. Pollutants such as compounds found in herbicides, pesticides, the harmful by-products of gasoline combustion are adhesive to dirt particles, removing this dirt from the street system will minimize the discharge of pollutants into storm inlets located in system.

Catch basin Maintenance. Catch basin maintenance is a two-step process. This task includes cleaning the external grate to permit stormwater to enter the system and removing sand, silt and debris from the sedimentation chamber of the intake structure.

The catch basins will be cleaned using mechanical and manual methods. In most situations, the catch basins will be cleaned and maintained in response to observations following significant rain events. Deficiencies will need to be immediately addressed to avoid continuous drainage problems after a significant rain event. Under normal conditions, catch basin maintenance is recommended every 12 months. However, because of the potential for foliage and other debris to enter the system, the City of Doral should consider conducting catch basin maintenance more frequently in some areas.

Pipe Flushing. Pipe flushing is typically performed in conjunction with catch basin cleaning and the work needed to perform this task is usually contracted out on an as-need basis. During this procedure, a high-pressure water hose is inserted into the pipe network of concern, which ultimately flushes debris into the downstream catch basin where it can then be removed. Pipe flushing is recommended to be performed every five years.

Swale Mowing. Grassed swales and landscaped medians play an important role in stormwater drainage. Consistent mowing of such features promotes stormwater retention and efficient percolation. The City of Doral should maintain swales and medians within public roadways and parking lots. Individual business owners and residents are mandated through local codes to maintain their facilities. This activity should continue on a scheduled basis.

Minor Repairs and Improvements. The final task conducted to maintain the stormwater collection system is routine improvements and repairs. This task covers activities ranging from the repair of collapsed pipes and manholes to the replacements of catch basin grates. Maintenance activities are performed in response to an immediate problem using the best methods available.

Capital Improvements

The capital improvement component will be based on analysis of the priority sub-basins. Recommended improvements to achieve the stated performance goals will be identified for each priority sub-basin. The recommended improvements will be quantified based on the available data. Preliminary opinions of probable costs will be prepared for each sub-basin. Based on the preliminary budgets, the priority sub-basin improvements will be grouped and phased to provide the proposed five- year capital improvement program. The capital improvement program proposed in this element will correct many pre-existing drainage deficiencies in the City of Doral on a priority basis, and provide for maintenance on system wide drainage LOS standards for all existing and planned land uses.

CITY OF DORAL WATER SUPPLY FACILITIES WORK PLAN

SECTION 1.0 - HISTORY AND STATUTORY OVERVIEW

The City of Doral was incorporated in 2003 as Miami-Dade County's 34th municipality located in the west-central portion of the County. The City has a land area of approximately 15 square miles bounded by the Town of Medley and unincorporated Miami-Dade County to the north, unincorporated Miami-Dade County to the south, east, and west and the City of Sweetwater to the southwest. A map of the City's boundary is provided in Figure 1-1.

As one of the most diverse and dynamic municipalities in the State of Florida and the United States, the City of Doral is a multi-cultural community comprised of residential, recreational, business, and industrial neighborhoods.

The City's government has operated under the Mayor-Council-Manager form of government since incorporation. Policymaking and legislative authority are vested in a governing council consisting of the Mayor and four other Council Members. The City Council, which is elected at large, is responsible for passing ordinances and resolutions, adopting the annual budget, and appointing the City Manager, City Clerk and City Attorney. The City Manager is responsible for carrying out the policies and ordinances of the Council, for overseeing the daily operations of the government, and for appointing the heads of various departments.

Chapter 163.3177(6)(c)3, Florida Statutes (F.S.), requires local governments to prepare and adopt Water Supply Facilities Work Plans into their comprehensive plans within 18 months after the South Florida Water Management District (SFWMD) approves a regional water supply plan or its update. The Water Supply Facilities Work Plan must address the development of traditional and alternative water supplies and management strategies, including conservation and reuse. The data and analyses, including population projections and water demand, must span at least a 10-year planning period and be consistent with the 2023-2024 Lower East Coast Water Supply Plan Update.

The 2023–2024 Lower East Coast Water Supply Plan Update (2023–2024 LEC Plan Update) is the fourth update to the 2000 Lower East Coast Regional Water Supply Plan (2000 LEC Plan), which previously was updated in 2006, 2013, and 2018.The 2023-2024 Lower East Coast Water Supply Plan Update was approved by the SFWMD's Governing Board on September 23, 2024. Therefore, local governments within the Lower East Coast Region are required to amend their comprehensive plans and include an updated Water Supply Facilities Work Plan and related planning elements by March 2025.

In order to meet water supply and water facilities planning requirements, local government comprehensive plans must address the following:

1. Coordinate appropriate aspects of the comprehensive plan with the appropriate water management district's regional water supply plan. [Section 163.3177(4)(a), Florida Statutes.]

2. Revise the Potable Water Sub-Element to adopt a water supply facilities work plan covering at least a 10-year planning period to meet existing and projected demand. The work plan must address those water supply facilities for which the local government has responsibility and include the facilities needed to develop alternative water supplies. The work plan must also identify conservation and reuse measures to meet future needs. [Section 163.3177(6)(c), Florida Statutes.]

3. Revise the Conservation Element to assess current and projected water needs and sources for at least a 10-year planning period. The analysis must consider the existing levels of water conservation, use, and protection, the applicable policies of the water management district, and the district's approved regional water supply plan. In the absence of an approved regional water supply plan, the analysis must consider the district's approved water management plan. [Section 163.3177(6)(d)3, Florida Statutes.]

4. Revise the Capital Improvements Element to identify capital improvements projects to be implemented in the first 5 years of the work plan for which the local

government is responsible, including both publicly and privately funded water supply projects necessary to achieve and maintain adopted level of service standards; and adopt a five-year schedule of capital improvements to include those projects as either funded or unfunded, and if unfunded, assign a level of priority for funding. [Section 163.3177(3)(a)4, Florida Statutes.]

5. Revise the Intergovernmental Coordination Element to adopt principles and guidelines to be used to coordinate the comprehensive plan with the regional water supply authority (if applicable) and with the applicable regional water supply plan. [Section 163.3177(6)(h)1, Florida Statutes.]

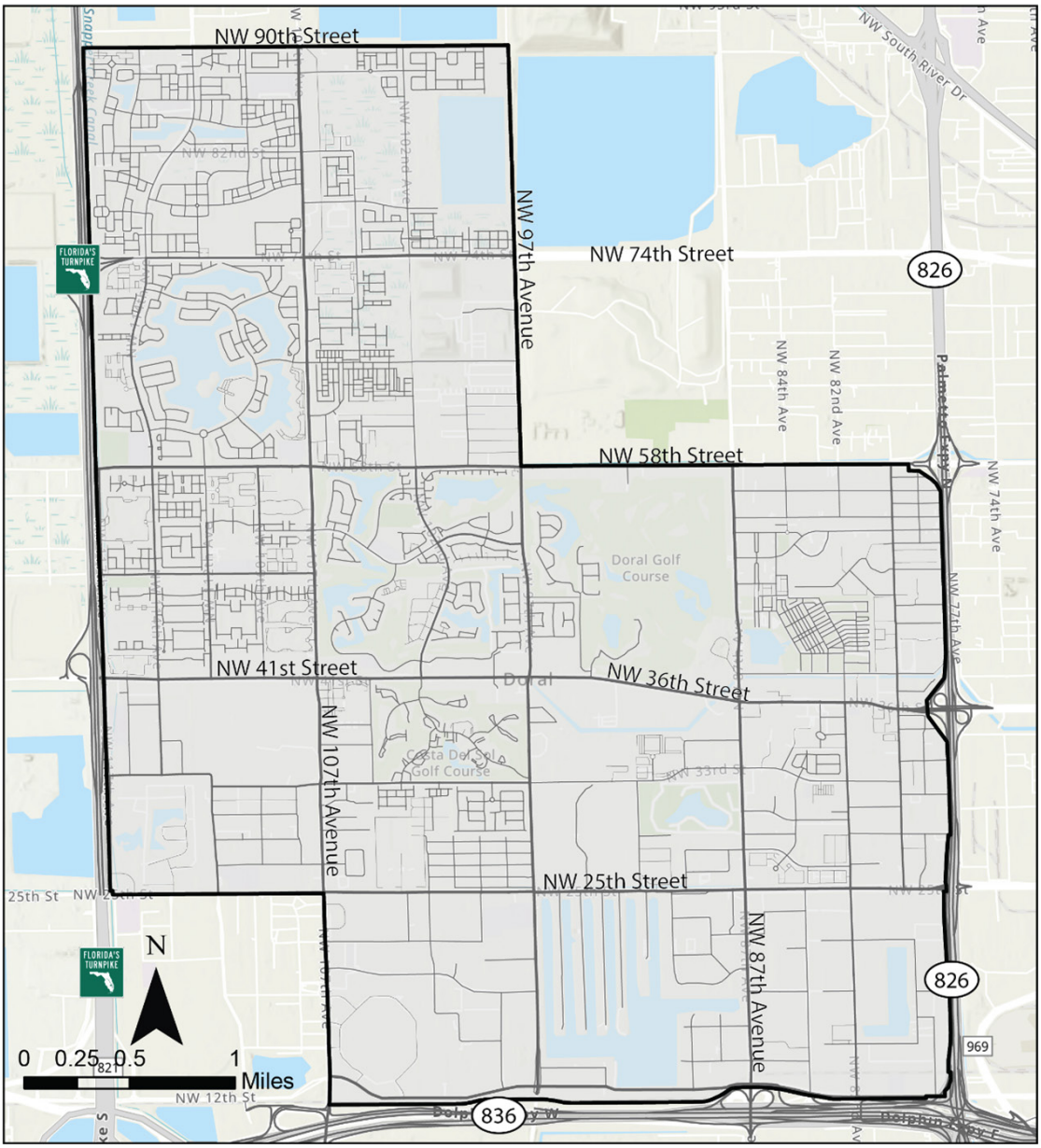
6. During the Evaluation and Appraisal review, determine if comprehensive plan amendments are necessary to reflect statutory changes related to water supply and facilities planning since the last update to the comprehensive plan. If necessary, adopt the plan amendments to incorporate the statutory changes as appropriate. [Section 163.3191(1) and (2), Florida Statutes.]

7. Ensure that adequate water supplies and faciolities 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.] Local governments should update their comprehensive plans and land development regulations as soon as possible to address this water supply concurrency requirement.

FIGURE 1-1: CITY OF DORAL, FLORIDA BOUNDARY (SOURCE: CITY OF DORAL, 2025)

City of Doral Comprehensive Plan

Doral City Limits



Legend

DoralLimits

SECTION 2.0 - WORK PLAN GOALS AND OBJECTIVES

The goal of the water supply planning process is to determine the local water needs and develop sound and workable solutions and polices to meet those needs and to ensure the long-term sustainability of potable water resources by maintaining or reducing the per capita water demand through implementation conservation measures, infrastructure improvements, and coordination with Miami-Dade Water and Sewer Department (MDWASD) and the South Florida Water Management District (SFWMD). The purpose of the City of Doral Water Supply Facilities Work Plan (Work Plan) is to identify and plan, in coordination with the Miami-Dade Water Sewer Department (WASD), water supply sources and facilities needed to serve existing and new development within the City over the next ten years.

The residents of the City of Doral obtain their potable water and sewer service directly from WASD, which is responsible for ensuring enough capacity to meet the water needs of existing and future water customers. In addition to serving the City, WASD is the designated regional supplier of potable water for most of the cities in Miami-Dade County. In that capacity, the WASD supplies the City of Doral's residential and non-residential property owners with potable water on a retail basis and bills these customers for this service. WASD owns, operates, and maintains a central potable water distribution system, along with the facilities for collection and treatment of water, which then transmits the potable water to its citizens throughout most of Miami-Dade County.

To maintain a water supply system and conservation program, the City recognizes there must be effective coordination with WASD and the SFWMD and has an excellent working relationship with both to ensure compliance with all regulations and guidelines. In addition, the City's Public Works and Planning and Zoning Departments, through the development approval process, coordinate with WASD to ensure enough water supply is available for existing and future customers and supporting infrastructure is adequately maintained.

The purpose of the City's Work Plan objectives is to ensure the implementation of potable water initiatives and/or programs that will reduce the per capita demand in the City of Doral, and aligns with states statutes, regional water supply plans, and comprehensive plan requirements.

- Promote the City's water conservation programs through education and proactive community programs.
- Require the adoption of Florida-Friendly Landscaping and irrigation efficiency through the site plan approval process, and development agreements
- Prioritize sustainable infrastructure improvements that ensure the long-term sustainability of potable water resources.
- Align water supply planning with Future Land Use Map and populations from comprehensive plan.
- Support alternative water supply development where feasible (i.e. reuse, etc.).
- Promote sustainable use of water resources and protect natural systems (i.e. aquifers, wetlands).
- Incorporate adaptive strategies for long-term sustainability.
- Develop a process to monitor water use, Gallons Per Capita per Day (GPCD), and infrastructure performance.
- Ensure transparency and community support for water supply strategies.
- Proactively participate in the County's Environmentally Endangered Land (EEL) Program, Florida Forever Program, Florida Community Trust and Save Our Everglades Program to secure public funding to establish a land banking program to voluntarily acquire land in the City to enhance open space, protect coastal wetlands, and water supply.

The City's residents and businesses obtain their water directly from Miami-Dade County. Therefore, the City's Water Supply Facilities Work Plan references the water demands and initiatives identified in the County's Miami Dade Water and Sewer Department 10- Year Water Supply Facilities Work Plan April 2022 provided in Appendix A. The City's Work Plan and comprehensive plan are consistent with State guidelines addressing traditional and alternative water supplies, service delivery, and conservation and reuse programs to serve existing and new development over the next 10 years.

The City's Work Plan is divided into seven sections: Section 1 – History and Statutory Overview

Section 2 – Work Plan Objectives Section 3 – Provision of Water Supply

Section 4 – Water Supply Capital Improvements Section 5 – Regional Issues

Section 6 – Goals, Objectives, Policies Section 7- References

SECTION 3.0 - PROVISION OF WATER SUPPLY

WATER SUPPLY PROVIDED BY LOCAL GOVERNMENT

The City of Doral does not provide water or sewer services to the residences and businesses within its jurisdictional boundaries. The water and sewer infrastructure serving the City is owned and operated by the WASD. The WASD distribution system supplies adequate water pressures within the City's boundaries so that high service pumps are not required to be owned or maintained by the City to maintain adequate delivery pressures. Within the City, there are no self-supplied water users other than permitted groundwater wells and on-site lakes that provide public supply and landscaping to a cemetery complex.

WATER SUPPLY PROVIDED BY OTHER ENTITIES

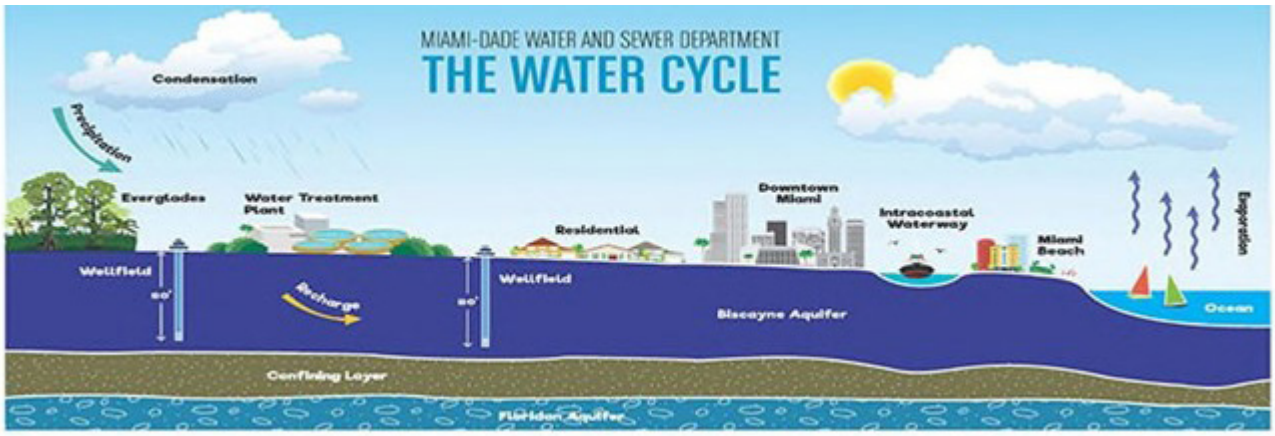
The first 20-Year Water Use Permit (WUP) for Miami-Dade County was approved by the South Florida Water Management District (SFWMD) Governing Board on Nover=mber 15, 2007. Subsequent modifications have been submitted by WASD and approved by SFWMD, with the latest permit issued on March 8, 2022. The water use permit limits WASDs annual allocation to 148,018 million gallons (MG) (392.2 MGD Biscayne Aquifer and 13.33 MGD Floridian Aquifer) and the maximum monthly allocation to 12,954.61 million gallons through 2042 (20 years). These allocations are further limited by the wellfield operational plan, dependent on the C-51 Reservoir offset. Between March 12,2042 and December 27, 2065, withdrawals from the Biscayne aquifer that are offset from the C-51 reservoir shall be limited to an annual allocation that shall not exceed 15 MGD. The C-51 reservoir project has been completed and operational since January 9, 2024.

The water supply projects in WASD's current Water Use Permit (WUP), which expires in 2065 addresses anticipated demands in the County's 10-year (2020-2030) Work Plan. These projects will undergo further refinement as necessary as conditions evolve, and any updates to address longer-term demands will be reflected in future WUP modifications submitted to SFWMD.

The WASD provides drinking water to 2.4 million Miami-Dade County customers and is the designated regional supplier of potable water to the City of Doral. In that capacity, the WASD supplies the City of Doral's residential and non-residential property owners with potable water on a retail basis at a customer cost determined by WASD.

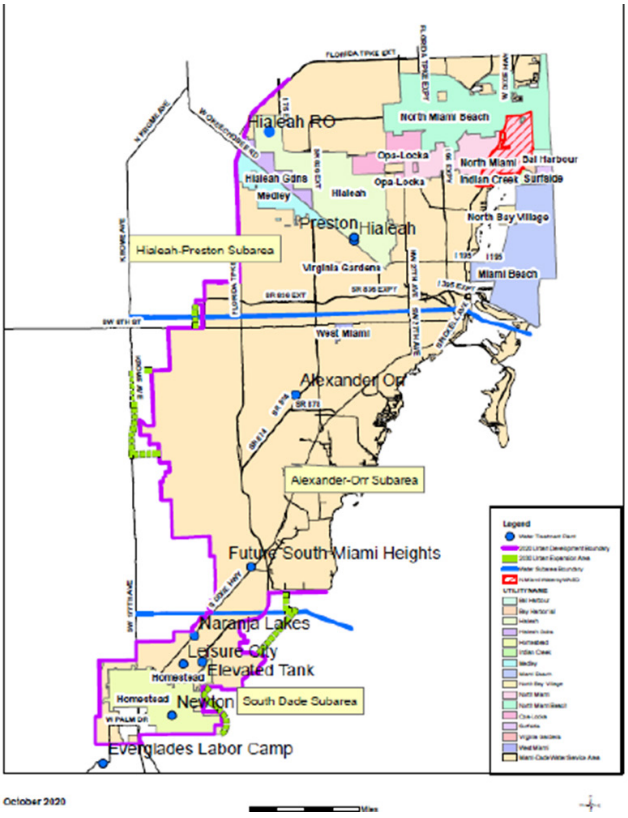
WASD owns, operates, and maintains a central potable water distribution system, along with the facilities for collection and treatment of water, which then transmits the potable water to its citizens throughout most of Miami-Dade County including those in Doral. A visualization of how Doral's residents obtain their potable water is provided in Figure 3-1. Some of Florida's rainfall slowly seeps, or percolates, into the ground to recharge, or refill the underground layers of sand, gravel, and rock. These layers, called aquifers, hold water. WASD drills wells into two of these aquifers, the Biscayne and the Floridan aquifers, to pump out water for treatment and distribution to its customers.

FIGURE 3-1: WATER CYCLE IN MIAMI-DADE COUNTY FL (FROM MIAMI-DADE COUNTY, 2020)



The WASD water service area, including its wholesale customers is depicted in Figure 3-2. WASD's water distribution system is supported by three regional treatment plants, five smaller treatment plants located in the southern portion of Miami-Dade County, and the Hialeah Reverse Osmosis Water Treatment Plant. The distribution systems serving these treatment plants are comprised of loops and interconnected transmission lines.

FIGURE3-2: WASD SUBAREAS, WATER TREATMENT PLANTS, AND WHOLESALE WATER CUSTOMERS (FROM: MIAMI-DADE COUNTY WATER AND SEWER DEPARTMENT, 2020)



The City of Doral is served by the Hialeah-Preston Subarea which is comprised of dedicated low-pressure pipelines, remote storage tanks, pumping facilities and high pressure, systems. The southwestern portion of the Hialeah-Preston water distribution facilities subarea, which includes the City of Doral, is supplied by a 36-inch diameter main that connects to the 54-inch diameter main heading out of the John E. Preston Water Treatment Plant at West 25th Street in Hialeah. The main heads west on NW 74th Street then turns south on NW 107th Avenue. It eventually interconnects with the Alexander Orr, Jr. subarea piping network on SW 56th Street around SW 117th Avenue.

As indicated in the Miami Dade Water and Sewer Department 10-Year Water Supply Facilities Work Plan April 2022, the water supply and treatment systems in the Hialeah- Preston Subarea have sufficient installed capacity to produce more potable water than is currently required to meet the needs of all WASD retail water customers in this Subarea, including the retail customers in the City of Doral. The supply capacity of the existing Hialeah-Preston Subarea wellfields is 343.43 mgd with a permitted raw water withdrawal allocation of 155.40 mgd. The capacity of the two Hialeah-Preston Subarea water treatment plants is 225.0 mgd. The design capacities of these water supply and treatment systems have been coordinated with future demands and allocations.

On February 9, 2015, the South Florida Water Management District approved a revision to WASD's Water Use Permit #13-00017-W (Application #14-627-12). The purpose of this modification was to provide WASD with a total annual allocation of 386.07 mgd (349.50 mgd from the Biscayne Aquifer and 36.60 mgd from the Floridan Aquifer). The most recent WUP modification was issued on March 8, 2022 with an expiration date of December 27, 2065. This update to the Water Supply Plan reflects updated demand projections based on most recent population data, and water supply projects within WASD's WUP.

The WASD service area includes all portions of Miami-Dade County within the Urban Development Boundary (UDB), excluding all or portions of North Miami, Aventura, Sunny Isles Beach, Biscayne Park, Miami Gardens, Homestead and Florida City. The retail municipal customers served by WASD are those located in all or portions of Aventura, Coral Gables, Cutler Bay, Doral, El Portal, Key Biscayne, Miami, Miami Gardens, Miami Lakes, Miami Shores, Miami Springs, Palmetto Bay, Pinecrest, South Miami, and Sweetwater. WASD's wholesale water customers are the cities, towns, and villages of Bal Harbour, Bay Harbor Islands, Hialeah, Hialeah Gardens, Indian Creek Village, Medley, Miami Beach, North Bay Village, North Miami, Opa-Locka, Surfside, Virginia Gardens and West Miami. The areas within the County's Urban Expansion are included in the planning horizon.

WASD's current WUP provides the County with sufficient water supplies through 2042, and additional water supply projects will be pursued to address longer-term needs for WASD's customers and the environment.

In the 10-Year Work Plan, WASD is committed to meet the water demand for all municipalities within its service area. The City of Doral is primarily served by the J.E. Preston Water Treatment Plant. Along with the Hialeah Water Treatment Plant, these plants are interconnected and act as a single system. The plants operate under a Title V Florida Department of Environmental Protection (FDEP) permit number 0250281-0005-AV. Both facilities treat raw water from the Biscayne Aquifer under consumptive use permit number 13-00017-W and utilize the same basic process for water treatment. The treatment process includes lime softening, chlorination, ammonization, fluoride, filtration, and air striping.

The Miami-Dade County Water Supply Facilities Work Plan dated April 2022 is hereby referenced in its entirety and is provided in Appendix A. The County Work Plan and subsequent revisions are incorporated into the City's Work Plan and Comprehensive Plan through Policy 5A.6.3. The intent of the County Work Plan is to meet statutory requirements and to coordinate the WASD's water supply initiatives with the SFWMD's Lower East Coast Water Supply Plan Update.

SECTION 4.0 - WATER SUPPLY FACILITIES WORK PLAN COMPONENTS

EXISTING LAND USE

The City does not anticipate increases in land area or any annexation. The City has no annexations in place at the time of development of the Water Supply Plan. The table below provides the existing land use categories, acreage and percentage of total land area.

RESIDENTIAL LAND USES		
Land Use	**Acreage**	**Percent**
Single-Family, Low-Density (Under 2 DU/Gross Acre).	1	0.01%
Single-Family, Med.-Density (2-5 DU/Gross Acre).	354	3.70%
Office Building.	242	2.53%
Single-Family, High Density (Over 5 DU/Gross Acre, other than Townhouses, Duplexes and Mobile Homes).	467	4.88%
Townhouses.	663	6.93%
Two-Family (Duplexes).	2	0.02%
Residential predominantly (condominium/ rental apartments with lower floors Office and/or Retail. High density > 15 dwelling units per ac, multi-story buildings (Generally more than 5 stories).	35	0.37%
Multi-Family, Low-Density (Under 25 DU/Gross Acre).	466	4.87%
Multi-Family, High Density (Over 25 DU/Gross Acre).	136	1.42%
Industrial intensive, Commercial Condominium type of use	242	2.53%
Sub-Total	**2608**	**27.25%**

OTHER LAND USES		
Land Use	**Acreage**	**Percent**
Beaches.	0.01	0.00%
Bus/Truck/Freight Forwarding Terminals.	137	1.43%
Canal right-of-way.	2	0.02%
Cemeteries.	158	1.65%
Colleges and Universities, Including Research Centers, Public and Private.	31	0.32%
Communications (Radio, TV, Cable, and Phone), excluding Antenna Arrays.	26	0.27%
Cultural (auditoriums, convention centers, exhibition centers, museums, art galleries, libraries).	3	0.03%
Electric Power (Generator and Substation, and Service Yards).	6	0.06%
Extraction, Excavation, Quarrying, Rock-Mining, excluding the resulting water body (see 917).	0	0.00%
Golf courses, Public and Private.	538	5.62%
Governmental/Public Administration (Other than Military or Penal).	114	1.19%
Highways and Expressways right-of-way and associated open and landscaped areas excluding paved expressways and ramps.	17	0.18%

OTHER LAND USES		
Land Use	Acreage	Percent
Hospitals, clinics, medical offices and/or dental facilities	46	0.48%
Houses of Worship and Religious, and associated uses (parking, retreat houses, residencies, childcare, etc.).	17	0.17%
Industrial Extensive	38	0.39%
Industrial Intensive, heavy-light manufacturing, and warehousing-storage type of use	1311	13.70%
Industrial Intensive, Office type of use	117	1.22%
Inland water bodies (Lakes, Ponds, and Watercourses) associated with industrial areas, industrial parks and new industrial development.	244	2.55%
Inland water bodies (Lakes, Watercourses) associated with residential developments.	409	4.27%
Major Approved Projects.	54	0.57%
Major Transmission Lines.	170	1.78%
Military Facilities.	54	0.57%
Municipal Operated Parks	137	1.43%
Nursing homes, Assisted living facilities, and Adult congregate living quarters	1	0.01%
Other inland water bodies (Lakes, Ponds, Watercourses other than rivers and canals), including road borrow pits.	230	2.40%
Parking- Public and Private Garages and Lots.	5	0.06%
Pasture (Grazing, Animal Farming, Dairy Farms and Animal Feed Lots), excluding Horse and Poultry.	176	1.84%
Paved Highways, Expressways and Ramps.	5	0.05%
Private Drives.	198	2.07%
Private Recreational Facilities Associated with private Residential Developments, except marinas/yacht basins, includes landscape and open spaces associated to residential, commercial and office developments.	90	0.94%
Private Schools, Including Playgrounds (K-12, Vocational Ed., Day Care and Child Nurseries).	28	0.30%
Public Schools, Including Playgrounds (K-12, Vocational Ed., Day Care and Child Nurseries).	107	1.12%
Railroads- Terminals, Trackage, and Yards.	35	0.37%
Rivers and Canals.(Water)	98	1.03%
Road Maintenance and Storage Yards, and Motor Pools.	3	0.03%
Sales and Services (Wholesale facilities, Spot commercial, strip commercial, neighborhood shopping centers/plazas). Excludes office facilities.	462	4.82%
Shopping Centers (Regional and Community).	7	0.07%
Social Services, and Charitable institutions (Shrines, Elks, Moose, Lions Club).	5	0.05%
Solid Waste Disposal and Transfer (Includes Dumps, Solid Waste Land Fills, Resource Recovery Plants and Facilities, Trash Transfer Stations).	152	1.59%
Street right-of-way and entrance features both public and private, and utility easements.	34	0.35%
Streets and Roads, except Expressways and Private Drives.	1055	11.02%
Transient-Residential (Hotel-Motel)	149	1.56%

OTHER LAND USES		
Land Use	Acreage	Percent
Vacant Government owned or controlled.	164	1.72%
Vacant, Non-Protected, Privately-Owned.	210	2.19%
Vacant, Protected, Privately-Owned. Proposed and designated EEL sites until acquired, or protected under any other conservation or environmental mechanism.	121	1.26%
Sub-Total	**6966**	**72.77%**
Total	**9574**	**100.00%**

RETAIL WATER DEMAND FORECAST IN THE CITY OF DORAL

The City of Doral population and water demand projections provided by Miami Dade Water and Sewer Department are provided in Table 3.1. Table 3.1 provides an overview of the 2024 Systemwide Per Capita-Gallons Per Capita Per Day (GPCPD) and projected water demand for the City. The 2024 Systemwide Per Capita-GPCD method is used by water management districts and utilities in Florida to project the average daily water use per person in utility services area or region. The GPCD is calculated by dividing the Total Finished Water Supplied (MGD) by Permanent Population Served times 1,000,000 divided by 365 days. The GPCD provided by WASD for the 10 year planning horizon is anticipated to be constant at 118 GPCD. The projected water demand will be between 9.14 and 10.47. The City will work with WASD to proactively implement water efficiency and conservation initiatives.

TABLE 3.1 CITY OF DORAL PER CAPITA, POPULATION AND WATER DEMAND PROJECTIONS

Year	Total Population[1]	2024 Systemwide Per Capita - Gallons Per Capita per Day (GPCD)	Projected Water Demand (MGD)
2020	77,578		
2024	78,008	118	9.14
2025	80,160	118	9.19
2030	82,312	118	9.46
2035	84,465	118	9.71
2040	86,617	118	9.97
2045	88,769	118	10.22
2050	77,578	118	10.47

Note: 1) Population projections prepared with the 2020 TAZ Population Projections provided by Miami-Dade County Transportation Planning Organization, based on the 2020 Census data

TABLE 3.2 MIAMI-DADE WATER AND SEWER DEPARTMENT SYSTEMWIDE PER CAPITA AND POPULATION AND WATER DEMAND PROJECTIONS

Year	Systemwide Baseline Per Capita (GPCD) (1)	Population (2)	Projected Demand (MGD)	Yearly Water Conservation (MGD) (3)	Cumulative Remaining Water Conservation (MGD) (3)	Demand with Conservation (MGD)	Systemwide Conservation Per Capita (GPCD)	CITY OF HOMESTEAD Finished Water Demand (MGD) (4)	PORT OF MIAMI Finished Water Demand (MGD) (5)	Total Finished Demand with Homestead and Port of Miami (MGD)
2020		2,301,505								
2025	137.83	2,396,448	330.30	0.26	0.26	330.04	137.72	0.75	1.00	331.79
2030	137.83	2,491,392	343.39	0.26	1.56	341.83	137.20	0.75	1.00	343.58
2035	137.83	2,586,335	356.47	0.26	2.86	353.61	136.72	0.75	1.00	355.36
2040	137.83	2,681,278	369.56	0.26	4.16	365.40	136.28	0.75	1.00	367.15
2045	137.83	2,776,222	382.65	0.26	5.46	377.19	135.86	0.75	1.00	378.94
2050	137.83	2,871,165	395.73	0.26	6.76	388.97	135.48	0.75	1.00	390.72

Notes:
(1) Baseline per capita is based on the average of past three years (2022, 2023, 2024) finished water per capita as reported to SFWMD.
(2) Population served prepared with the 2020 TAZ population projections provided by Miami-Dade County TPO (Transportation Planning Organization), based on the 2020 Census and 2020 MSA Projections prepared by Miami-Dade RER Planning. The population distribution within WASD's service area was prepared utilizing the 2018 population distribution GIS module by AECOM.
(3) A systemwide total of 0.26mgd/year conservation and leak repairs is planned through 2050, for a cumulative total from 2025-2050 of 6.76mgd in 2040. This conservation will be achieved implementing the current BMPs (toilet, shower, faucet rebates, showerhead giveaway & exchanges, irrigation rebates) and the Leak Detection and Repair Program.
(4) The City of Homestead has a water use agreement with WASD to purchase up to 3 MGD to meet the demands of its retail water customers. Through January 2024, the City purchases an annual average of 2.25 mgd, and a total of 0.75 mgd is planned for future demands.
(5) Anticipated demand for the expansion of the Port of Miami.

WASD WATER TREATMENT PLANTS

WASD owns and operates four main water treatment plants and five smaller water treatment plants located throughout the county. A brief description of the four main water treatment plants is as follows.

The Hialeah Water Treatment Plant is located at 700 West 2nd Avenue, Hialeah, Florida and was originally constructed in 1924, with upgrades in 1935, 1946 and 1991. This facility has a maximum installed design capacity of 60.0 million gallons per day. The treatment process includes lime softening with sodium silicate activated by chlorine, re-carbonation, chlorination, ammonization, fluoridation, filtration, and air stripping. There are plans to rerate and upgrade this plant to a capacity of 70.0 mgd, if necessary.

The source water for Hialeah WTP is from the Hialeah-Miami Springs Wellfields, supplemented by the Northwest Wellfield. The Hialeah WTP has a current rated capacity of 60 MGD. The treatment process 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 Hialeah Reverse Osmosis (RO) Water Treatment Plant was released for operation by the Florida Department of Environmental Protection (FDEP) in November 2013. The design, construction and operation of this plant is part of a Joint Participation Agreement (JPA) between the City of Hialeah and Miami-Dade County. The plant is approved to operate at a capacity of 7.5 mgd. An additional 2.5 mgd was scheduled to be completed by December 31, 2022. The main source of water for the Hialeah RO WTP is the Floridan Aquifer. Currently, this plant serves the City of Hialeah and unincorporated areas within WASD's service area. This plant is located at 4250 W. 114th Terrace, Hialeah, Florida. The Hialeah RO plant is currently in operation serving 50% of its water capacity to the City of Hialeah and 50% to unincorporated areas within the WASD's service area.

The John E. Preston Water Treatment Plant is located at 1100 West 2nd Avenue, Hialeah, Florida and was originally designed as a 60 mgd plant in 1968, with upgrades in 1980 (upgraded to 110 mgd), 1988 and 1991. In 1991, the plant was modified with an air stripping capacity of 185 mgd to remove volatile organic compounds (VOCs). In 2005, plant process modifications to provide enhanced softening for reduction of color and total organic carbon came on-line. The current rated capacity is 165 mgd with a treatment process similar to the Hialeah Water Treatment Plant.

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 like 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 cited in a residential area of Hialeah.

The Alexander Orr, Jr. Water Treatment Plant is located at 6800 SW 87th Avenue, Miami, Florida and was originally constructed in 1954. The Alexander Orr, Jr. Water Treatment Plant was expanded on several expansions over the past 50 years. This facility has a maximum installed design capacity of 256mgd with a rated capacity of 214.74 mgd. This plant receives its source water from the Alexander Orr, Jr. Wellfield, Snapper Creek Wellfield, Southwest Wellfield, and the West Wellfield. The plant's treatment process is very similar to the process used at the Hialeah and John E. Preston Water Treatment Plants.

The Alexander Orr, Jr. WTP can also receive groundwater from five Upper Floridan Aquifer wells located in the West Wellfield and the Southwest Wellfield. Finished water is distributed to a service area generally delineated as south of Flagler Street.

WASD PUBLIC POTABLE WATER WELLS

There are no private potable water facilities in the City of Doral. WASD's wellfields and their corresponding Cones of Influence are in or near the City. These wellfields consist of 45 individual wells and have a total designed installed capacity of approximately 295 mgd. Of these wells, 23 provide raw water to the Hialeah Water Treatment Plant

while the remaining 22 wells service the J.E. Preston Water Treatment Plant. Groundwater modeling indicates

that even considering high levels of projected sea level rise, WASD's wellfields will not be impacted by saltwater intrusion. Further modeling is currently underway to extend the planning scenarios through the year 2070. These simulations incorporate anticipated impacts from climate change, such as increases/decreases in annual precipitation and extreme weather events. To protect the quality of the groundwater in the area, the City of Doral has adopted the Miami-Dade County Wellfield Protection Program, which restricts the types of land uses allowed within the area of the wellfield cones of influence. The following are some of the restrictions associated with the Wellfield Protection Program:

- Only uses that do not generate hazardous waste are allowed within the Cone of Influence.
- All permitted land uses within the Cone of Influence shall be required to connect to the WASD central sewer collection system.
- Developments within the Cone of Influence shall be required to meet the minimum requirements for percentages of pervious area.
- Land uses within the Cone of Influence shall be restricted to those uses that do not create water pollution.

WASD FINISHED WATER STORAGE FACILITIES

The Hialeah-Preston Finished Water Storage Facilities combine reservoir ground storage, clear wells, and ground and elevated storage tanks to provide a total of 64 million gallons of storage.

SECTION 5.0 - WATER CONSERVATION

The City shall promote and further the County's Water Efficiency Use Plan which requires compliance with water use efficiency standards for new residential, commercial, and industrial development and allows for sub-metering in multi-family residential developments. The requirements set forth in Miami-Dade County Ordinance became effective July 1, 2009. Miami-Dade WASD implements all Best Management Practices included in the Water Efficiency Use Plan in addition to various irrigation, Florida Friendly Landscaping, and plumbing fixture efficiency ordinances.

All residences and businesses in the City of Doral receive potable water from Miami-Dade County and are subject to the County's ordinances regarding water conserving practices. The City does not have access to the accounts or the water use data of the County's water customers, including those located in the City of Doral. Therefore, many water conservation practices instituted in the City of Doral are those that follow the County's water use efficiency plan and its ordinances pertaining to the efficient use of water including year- round landscape irrigation restrictions, landscape standards, use of sub-metering, and the use of water conservation rate structures. The City enforces these ordinances through its code compliance department and, in 2024 the City adopted mandatory year-round landscape irrigation conservation measures and variances consistent with the requirements of Chapter 40E-24, F.A.C. In addition, the City has adopted ordinances that address water use related to building construction and landscape design.

These plans and ordinances are summarized as follows.

Miami-Dade County Water Conservation Plans and Ordinances

The City of Doral, located in Miami-Dade County, is subject to the following County plans and ordinances.

Miami-Dade Water Use Efficiency Plan: The Miami-Dade WASD's 20-year Water Use Efficiency Goal-Based Plan (Efficiency Plan) was approved by the SFWMD in May 2007. Included in the Efficiency Plan is the Water Conservation Best Management Practices (BMP) Implementation Schedule, Costs, and Savings Projections through the year 2026. The Water Use Efficiency Plan also includes a water loss reduction component which implements an annual leak detection survey of the county's entire water distribution system.

Advanced technology (i.e. implementation of mobile/fixed network systems) is used to detect leaks which are followed up by repairs.

WASD is implementing the BMPs included in the 2019 Annual Report for the Water Conservation Plan to improve the management of traditional water supplies, encourage development of alternative water supplies and improve water use efficiency. Several initiatives were adopted by WASD to encourage efficient use of water by residential and non-residential users. Some initiatives included plumbing retrofits, landscape irrigation evaluations, and residential and commercial water use evaluations and rebates.

To ensure future water savings, the Water Use Efficiency Standards for new residential and commercial developments enacted by the Miami-Dade Board of County Commissioners on January 1, 2009 are being implemented through local building codes. The standards include technical amendments to the Building Code to require maximum water conservation flow rates for plumbing fixtures. Because of these efforts, as of December 31, 2019, the County saw an 18.6 mgd reduction in finished water demand from the year prior to the implementation of the Efficiency Plan in 2006 (from 341.62 mgd to 323.04 mgd).

Miami-Dade County Water Conservation Plans and Development Codes: The County adopted a Water Conservation Plan that was added 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 identifies BMPs for the service area.

Since January 1, 2009, the county's building code, specifically Section 8-31 and 32-84, requires the installation of water efficient fixtures and high efficiency appliances. In 2007, the County developed a water conservation program that provides rebates to residents that install high efficiency faucets, toilets and showerheads in properties constructed prior to 1996. It also includes rebates for water efficient upgrades to irrigation systems in single family and large properties throughout the County.

Miami-Dade County Permanent Landscape Irrigation Restriction: Lawn and landscape irrigation throughout the county has been limited to two days per week year-round as required by Section 32-8.2 of the Miami-Dade County Code of Ordinances. Irrigation is not permitted between the hours of 10:00 a.m. and 4:00 p.m.

Miami-Dade County Landscape Standards: Development within the county must comply with landscape standards in Sections 18-A and 18-B of the County Code which encourages Florida Friendly Landscaping to reduce outdoor water use.

Miami-Dade County Multi-Family Sub-Metering: The County Code was also modified to authorize the use of submetering in multifamily residential developments, requiring a meter be installed in each individual dwelling unit for water billing purposes instead of being billed using a single master meter. Use of submeters enhances water use monitoring and encourages water conservation.

Water Conservation Based Rate Structure: Miami-Dade County has adopted a water conservation-based rate structure for its retail water customers.

City of Doral Ordinances and Codes Promoting Water Conservation

The City has adopted the following ordinances and codes to promote water conservation by the City's residents. Because the City does not have access to customer water use data, the City is unable to develop estimates of the amount of water conserved.

Use of Florida-Friendly Landscape Principles: The City of Doral Comprehensive Plan and Land Development Code recommends use of Florida-Friendly landscape materials and the minimum percent of required pervious area that must follow the principles of Florida Friendly Landscape provisions as set forth in the South Florida Water Management District's Xeriscape Plant Guide II.

Requirement of High Efficiency Plumbing Fixtures in New Construction: The City of Doral has adopted the Florida

Building Code (FBC) which contains plumbing flow restriction requirements. The County Code prohibits the cities within its jurisdiction from enacting standards less stringent from the FBC. The City of Doral Building and Inspection Services also includes, in their procedures, provisions for new construction to have water conservation control devices installed per the Florida Plumbing Code, as a condition for granting certificates of occupancy.

Rain Sensor Overrides for New Lawn Sprinkler Systems: The City of Doral has adopted the FBC, which requires the installation of rain sensors on new irrigation systems.

Additionally, the City of Doral abides by all County's landscape Code requirements, including the use of rain sensors on automatic lawn sprinklers systems.

City of Doral Adoption of the SFWMD's Water Shortage Restrictions: In 2007, the City of Doral adopted Ordinance No. 2007-13 entitled "Water Restrictions" to protect the water resources of the City from harmful effects of over-utilization during periods of water shortage and to assist the SFWMD as it implements its water shortage plan. The provisions are found in Chapter 47 – Division 2. – Water Restrictions of the City of Doral Code of Ordinances. This ordinance applies to all persons using the City's water resources that are subject to the "water shortage" or "water shortage emergency" as determined by the SFWMD, whether from a publicly- or privately-owned water utility system, private wells, or private connections with surface water bodies. The use of treated effluent or saltwater is excluded from the requirements of this ordinance. The ordinance references the South Florida Water Management District's Water Shortage Plan as provided in Chapter 40E-21, Florida Administrative Code.

This ordinance includes requirements for restrictions on water use during times an "emergency situation" is declared by the SFWMD or when the City Council determines a reduction in water consumption is necessary to alleviate a local water shortage within the WASD water system. Water restrictions may include reduction of hours and days allowed for irrigation and the prohibition on the washing of vehicles and outdoor surfaces, the operation of ornamental fountains and air conditioning systems that do not recirculate the water. Other restrictions include limitations on filling and using swimming pools, limitations on water leakage through defective plumbing, restrictions on hotels and restaurants as to the minimum amount of water necessary to conduct operations and other restrictions, as necessary.

City of Doral's Public Information Program: The City distributes information regarding the importance of water conservation and best practices to its residents and businesses through the City's webpage and publications of the WASD and the SFWMD. City staff include professionals with in-depth knowledge of water resources who are available to speak to local schools and community groups who are interested in promoting water conservation and management initiatives. The City also supports and promotes "Green" events through the local schools or community groups.

WATER REUSE

Historically, Florida's utilities, local governments, and water management districts have led the nation in implementing water reuse programs that increase the quantity of reclaimed water used and public acceptance of reuse programs. Section 373.250(1), Florida Statutes 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), Florida Statutes, provides that "reuse is a critical component of meeting the state existing and future water supply needs while sustaining natural systems."

According to WASD's 2022 Water Supply Facilities Plan Update, Section 4.5.1.2 Wastewater Reuse, "The County's projected finished water demands are now markedly lower than anticipated when the first 20-year water use permit application was submitted. As such, wastewater reuse to address water supply demands is no longer required, and other alternative water supplies (Floridan aquifer, water conservation, C-51 reservoir, etc.) have been determined to be more viable and shall be considered in the future. WASD is currently implementing a total of 16.49 MGD of reuse

at each of the Wastewater Treatment Plants, primarily for in-plant (process water) use. In addition, WASD will be providing up to 15 MGD of reclaimed water from the South District Wastewater Treatment Plant to the FPL facilities at Turkey Point, per Miami-Dade County Resolution No. R-579-20 approved by the BCC on June 16, 2020."

WASD is currently implementing a total of 18.42 MGD of reuse at each of the Wastewater Treatment Plants, primarily for in-plant (process water) use. WASD is also pursuing a new industrial reuse strategy at the three Wastewater Treatment Plant (WWTP) based on the use of Effluent Energy Recovery Systems, to provide cooling to buildings and energy intensive processes at the WWTPs. There are no water reuse projects identified in the City's Capital Improvement Element.

The City of Doral supports water reuse initiatives under consideration by the SFWMD and Miami-Dade County and WASD's efforts to implement reuse projects. The City supports the County's implementation of new regulations or programs that are cost-effective and environmentally sustainable, which are designed to increase the volume of reclaimed water used and public acceptance of reclaimed water.

INTERGOVERNMENTAL COORDINATION

The City will continue to coordinate future water supply planning and water conservation efforts with WASD and the SFWMD. Specifically, the City will continue to coordinate with Miami-Dade County and WASD regarding the following issues.

COORDINATION WITH THE COMPREHENSIVE PLAN

Sections 373.709 and 163.3177(6)(c)3, Florida Statutes, require local governments to adopt the water supply recommendations as either goal, objective and policies (GOPs) from the adopted Water Supply Work Plans into the corresponding elements (i.e. Future Land Use, Conservation, Infrastructure, Capital Improvement, and Intergovernmental Coordination Elements) of their respective comprehensive plan. In addition, sec. 163.3177, Florida Statutes, also requires the local governments to coordinate with the comprehensive plan text amendment with the water management districts.

- Work with the Miami-Dade County WASD to examine opportunities within Doral to utilize reclaimed water on area golf courses, parks and medians, and if feasible, identify an initial public demonstration project .
- Ensure that the City's potable water demand is included in the Miami-Dade County Comprehensive Development Master Plan (CDMP) and WASD's 10-Year Water Supply Facilities Work Plan
- Coordinate with the Miami-Dade County WASD to provide potable water facilities to meet existing and projected demands based on Level of Service (LOS) standards
- Ensure that potable water facility deficiencies under control of the City are corrected to maintain the adopted level of service standards
- Ensure that potable water service continues to be planned and provided in conformity with the City's Future Land Use Element and the Miami-Dade County CDMP
- Coordinate future land use designations to ensure that sufficient water supply is available to serve existing and projected demand
- Coordinate with Miami-Dade County WASD to meet existing and future demands
- Coordinate raw water wellfield expansion and well locations
- Coordinate with Miami-Dade County to identify the County's commercial and industrial enterprises that utilize, produce, or dispose of hazardous chemicals as a means to track potential sources of water contaminants
- Annually communicate the projected population and non-residential growth to WASD to ensure long term

demand is reflected in WASD's water supply reports and permits with the SFWMD and other Federal and State agencies.

- Encourage the creation and expansion of storage and distribution facilities for reclaimed water to institutional, commercial, and residential properties to reduce the use of potable water for irrigation

- As needed, coordinate with Miami-Dade County WASD to implement a leak detection program that would identify users with unaccounted for water loss greater than 10 percent

- Coordinate with Miami-Dade County WASD to develop strategies to improve the resiliency of existing water resources to protect future water quality and minimize the potential for flood damage and water shortage.

The City coordinates with Miami-Dade County and the SFWMD regarding the following issues.

- Implement comprehensive water conservation measures citywide to ensure that a sufficient supply of water is available to meet current and future demand for potable water

- Promote public information programs sponsored by the SFWMD to increase public awareness and acceptance of water conservation techniques through newsletters, public service announcements, and displays at public awareness events

- Determine and assess impacts of proposed developments on the County's potable water supply

- Implement water restrictions and implement emergency water conservation measures when necessary

- Conserve and maintain sufficient fresh water supplies, especially during dry periods and implementing water demand management policies and programs

- Distribute water conservation booklets and brochures produced by the SFWMD and other environmental agencies at City Hall and other public facilities

Coordination with the South Florida Water Management District

The Work Plan is required to be consistent with Sections 373.709 and 163.3177, Florida Statutes; the Miami-Dade County Water Supply Facilities Plan; and the South Florida Water Management District's (SFWMD) 2023–2024 Lower East Coast (LEC) Water Supply Plan Update. The LEC Water Supply Plan was previously updated in 2006, 2013, and 2018, and the most recent update was approved by SFWMD in September 2024. As a result, the City is required to update its 10-Year Water Supply Facilities Work Plan within 18 months of the SFWMD LEC Water Supply Plan update. Accordingly, the City must prepare and adopt its Water Supply Facilities Work Plan by March 2026, in accordance with Section 163.3177(6)(c), Florida Statutes, to ensure coordination with the SFWMD Lower East Coast Water Supply Plan Update.

Coordination with Miami Dade County Water and Sewer Department (WASD)

The City recognizes that proactive water conservation requires effective coordination with the Miami-Dade County Water and Sewer Department (MDWASD). As a retail customer of MDWASD, the City maintains an ongoing working relationship with the Department. The City's Public Works Department coordinates with MDWASD to ensure sufficient water supply capacity to serve both existing and future customers. In support of these efforts, the City references water conservation initiatives identified in Miami-Dade County's 10-Year Water Supply Facilities Work Plan Update (2023) and the text amendments to the Comprehensive Development Master Plan adopted on January 19, 2023 (Ordinance No. O-23-6 and Amendment No. 22-01ER).

The City will continue to ask the SFWMD to review drafts of its Water Supply Facilities Work Plan Update each time the LEC Water Supply Plan is updated.

The City has continuous communication with Miami-Dade County, WASD and the SFWMD with respect to the issues listed above and as new issues arise. As it becomes evident that new issues will become important to water resource, demand, or supply management, they will be incorporated into future Water Supply Facility Work Plan Updates.

SECTION 6.0 - WATER SUPPLY CAPITAL IMPROVEMENTS

CAPITAL IMPROVEMENTS SCHEDULE

The Miami Dade Water and Sewer Department 10-Year Water Supply Facilities Work Plan April 2022 describes the water supply facilities that are planned to meet future water demands through 2030. The County's current forecast of finished water demand is significantly lower than was anticipated when its 20-year water use permit (WUP) application was submitted to the SFWMD in 2007. The decrease in water demand is due to factors internal and external to WASD that significantly reduced Miami-Dade County's per capita water consumption and overall drinking water production over the past 10 years. As such, the development of reclaimed water to address alternative water supply is no longer required or needed. The reduced water demand forecast can primarily be attributed to the following factors.

- The population growth rate has been lower than originally forecast.
- WASD's water conservation program reduced per capita water consumption.
- Water use for irrigation fell after residential and commercial year-round irrigation restrictions became permanent by the SFWMD and the County.
- Landscape watering requirements fell after the County adopted ordinances requiring Florida Friendly Landscaping.
- Florida Building Code changes requiring higher efficiency fixtures for new construction increased customer water use efficiency.
- Evolving trends in housing demographics (apartment development versus single family homes), and water use practices reduced the demand for potable water.
- Water demand fell due to increases in water and sewer rates.

The Miami-Dade County Schedule of Capital Improvements for Sewer Facilities and Water Facilities is provided in Appendix B of the County Work Plan and in the County's Adopted FY 2025-2034 Capital Budget and Multi-Year Capital Plan. The purpose of the capital improvements is to upgrade and improve the system; renovate and upgrade existing facilities; improve the wellfields and pump stations; automate the water treatment plants; acquire land, extend the system; and prepare engineering studies.

The status of the County's alternative water supply (AWS) projects that may benefit the County's retail customers in the City of Doral is provided in Table 4-1. These projects will undergo further refinement as needed and updates to address longer-term demands will be reflected in future WUP modifications submitted to SFWMD. All planned projects are based on current wholesalers remaining on the WASD system through 2040.

TABLE 4-1: WASD ALTERNATIVE WATER SUPPLY PROJECTS IN WASD'S WUP, EXHIBIT -7, MARCH 8, 2022

Completion Date	Annual Average Finished Water Quantity in MGD and Source		
Completed	7.50	Hialeah Floridan Aquifer RO WTP-Phase 1-a, 10 MGD & 6 Floridan Aquifer supply wells	AWS
12/31/2022	2.50	Hialeah Floridan Aquifer RO WTP-Phase 1-b, 4 Floridan Aquifer supply wells	AWS
10/31/2022	15.00	C-51 Reservoir	AWS
12/31/2026	12.45	South Miami Heights WTP Back-Up Phase 1(RO portion)	AWS
12/31/2033	5.00	South Miami Heights WTP Back-Up Phase 2(RO portion)	AWS
Total	**42.45**		

FUNDING

The City of Doral has not identified any financial responsibilities related to the collection, storage, or distribution of potable water, including water conservation. The costs of operating, maintaining, and improving the WASD water and sewer systems, including the County's conservation programs, are offset by County-established water and sewer rates, County bonds, and government grants provided to the County. The retail customer's water bill is based on the established water rates and the volume of water measured by water meters installed at each customer's service location.

The WASD water and sewer system is financed through an enterprise fund of Miami-Dade County. This fund is separate from all other county funds. The County annually reviews the water and sewer rates charged to customers and adjusts these rates as needed to provide sufficient revenues to offset the administrative, operation and maintenance, debt service and other expenses set forth in the Miami-Dade County WASD annual budget.

SECTION 7.0 - REGIONAL ISSUES

CITY OF DORAL, FLORIDA WATER SUPPLY FACILITIES WORK PLAN

The City is aware of and studies the regional issues that impact or have the potential to impact water supply, water demand, and utility infrastructure. The City works with other local governments and utilities within the region to address these issues. This section summarizes the regional issues being followed by the City including:

- Regional Climate Action Plan;
- Climate Change;
- Sea Level Rise;
- Saltwater Intrusion;
- Extreme Weather Events;
- Infrastructure Development;
- C-51 Reservoir;
- Lake Okeechobee Surface Water Allocation Limitations;
- Lowering Lake Okeechobee Level; and,
- Use of brackish groundwater from the Floridan Aquifer.

Each regional issue is presented in the subsections that follow.

REGIONAL CLIMATE ACTION PLAN

Southeast Florida's unique geographic characteristics make it one of the most vulnerable regions to be impacted by climate change and sea level rise. These characteristics include low land elevations, flat topography, a porous geology, and dense coastal development.

In combination, climate change and sea level rise are expected to present significant challenges relating to water resource planning, management, and infrastructure for communities throughout the region, which includes Palm Beach, Broward, Miami-Dade and Monroe counties. These communities have agreed to partner in regionally-coordinated climate mitigation and adaptation strategies as part of the Southeast Florida Regional Climate Change Compact (Compact) and have jointly developed and adopted a Regional Climate Action Plan (RCAP) including 21 recommendations that address "Water Supply, Management, and Infrastructure".

The water supply-related recommendations from the Regional Climate Action Plan 2.0 are summarized in Table 5.1.[1] These recommendations are intended to advance water management strategies and infrastructure improvements needed to mitigate the adverse impacts of climate change and sea level rise. The RCAP was last updated November 2022.

[1] *http://southeastfloridaclimatecompact.org/regional-climate-action-plan/*

TABLE 5.1 - WATER SUPPLY RECOMMENDATIONS OF THE 2022 REGIONAL CLIMATE CHANGE ACTION PLAN

Item	Recommendations
WS-1	Practice integrated water resources management.
WS-2	Foster innovative water management.
WS-3	Advance water resource management research
WS-4	Coordinate regional investments in water management.
WS-5	Expand use of green infrastructure and net zero solutions.
WS-6	Use consistent future conditions water management scenario planning.
WS-7	Assess climate impacts on water infrastructure.
WS-8	Modernize water infrastructure development standards.
WS-9	Ensure a resilient regional flood control system.
WS-10	Integrate surface and groundwater impacts on infrastructure.
WS-11	Increase resilient water infrastructure and water quality.
WS-12	Phase out septic systems.
WS-13	Coordinate saltwater intrusion mapping.
WS-14	Develop a database of resilient water projects.
WS-15	Support the Comprehensive Everglades Restoration Plan (CERP)
WS-16	Expand surface water storage.
WS-17	Support private property adaptation.

Source: http://southeastfloridaclimatecompact.org/regional-climate-action-plan/, 2022

As WASD is the water supplier to the City of Doral residents and businesses, Miami-Dade County has incorporated these recommendations into its Comprehensive Planning. The recommendations being implemented by the City of Doral are those that are within the City's authority. They are incorporated throughout this Water Supply Facilities Work Plan Update and related comprehensive planning element updates.

City Specific Actions, Programs, Regulations or Ordinances

The actions that the City of Doral has taken to address the recommendations of the Southeast Florida Regional Climate Change Compact are summarized as follows.

City's Green Statement: The City of Doral has been a leader statewide and nationally since 2003 when, at the City's founding, the new City leaders began work on a new Comprehensive Plan. This Plan took the existing urban sprawl-type development pattern that had developed in Miami-Dade County and transformed the Doral area into a city with downtown focus, mixed use opportunities, business orientation, local transit, and traditional neighborhoods.

Under the strong green leadership of Mayor Juan Carlos Bermudez and the City Council, the Mayor signed the U.S. Mayor's Climate Protection Agreement in 2005. The City continued its green push in 2008 with the development and approval of its "Green Master Plan" which was awarded the 2009 Excellence in Planning Award by the Florida Chapter of the American Planning Association and the 2009 Outstanding Planning Innovation Award of the Florida Planning and Zoning Association. The City now has updated the Comprehensive Plan Green Element to include resiliency policies.

Florida Green Building Coalition (FGBC): The City of Doral is FGBC Certified (Silver certification level). In keeping with the organization's mission, FGBC has developed green certification programs that apply to construction projects and local government operations. Seeking FGBC certification demonstrates a commitment to providing your customers with products or services that are green and sustainable. Local Florida governments have found that this program protects the environment and improves operational efficiencies that reduce the taxpayer's cost of government.

Green Master Plan: The City of Doral published its Green Master Plan in 2008. The goal of this Plan is to conserve natural resources, enhance quality of life, bolster economic vitality, and leave a sustainable legacy to future generations of City residents. Preparing for a future with limited resources is one of the most important planning challenges that decision makers face. Confronted with this challenge, the City of Doral realized the necessity to plan for a sustainable future. The City has signed the U.S. Mayors' Climate Protection Agreement and has developed the Green Master Plan to guide operations and growth in an environmentally responsible manner. This far-reaching approach builds on the City's previous environmental efforts with the goal to conserve natural resources, enhance quality of life, bolster economic vitality, and leave a sustainable legacy to future generations of City residents.

Green/Resiliency Element of the Comprehensive Plan: In 2011, the City of Doral's Comprehensive Plan (CP) was amended to include the City's Green Element. The "Element" is composed of two parts: (1) Goals, Objectives & Policies (GOPs), and (2) Data, Inventory, and Analysis (DIA). In this Element, the words "green" and "sustainable" are synonymous and when used in the Comprehensive Plan denote "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." This definition was developed as part of the Brundtland Commission Report in 1987 and is an accepted industry standard. Included in this update are updates to the Green Element now titled Resiliency Element.

The placement of the Green Element as the initial element in the City's Comprehensive Plan is intended to send the very real signal that the Green Element is the "glue" that gives sustainable purpose and guidance to the other Comprehensive Plan elements, including land use. The City's Resiliency Element component of the Comprehensive Plan meets and exceeds the requirements of State House Bill 697 which requires cities and counties to include consideration of greenhouse gas emissions and energy efficiency in their local comprehensive plans (Section 163.3177, F.S.).

The City is in support of SFWMD and Miami-Dade County water conservation and reuse projects. The Table below is a summary of water conservation sections in the County Code.

Section	Title
7-1	Water Conservation District
8A-381	Remetering
8-31	Plumbing Fixtures
18-A and 18-B	Landscape Irrigation
32-8	Regulation of Water Use During and Actual or Potential Drought Situations
32-8.1	Water Shortage Emergency Restrictions
32-8.2	Permanent Year-Round Landscape Irrigation Restrictions
32-83.1	Water Conservation Plans
32-84	Water Use Efficiency Standard Manual
32-86	Water Use Efficiency and Conservation Education and Outreach

5.1 Climate Change

Investigations and evaluations conducted at the national, regional, and local levels have reinforced the need to plan for the predicted impacts of more frequent and severe drought and increases in tidal and storm-related flooding. To protect the City's water supply infrastructure, ongoing planning efforts should be flexible to adapt to these climate changes.

The City of Doral, together with its municipal and regional partners, understands that local governments and water utilities must integrate water supply and climate change considerations through coordinated planning efforts. The City works to provide relevant updates to the Water Supply Facilities Work Plan and to enhance the Goals, Objectives, and Policies (GOPs) of its comprehensive plan.

The City is a leader in developing planning tools and identifying achievable and cost- effective goals that meet the needs of its community. In 2013, the City signed a resolution endorsing the Mayor's Climate Action Pledge in support of the Southeast Florida Regional Climate Change Compact and the Regional Climate Action Plan.

The City remains a participant in the Southeast Florida Regional Climate Change Compact. The Compact outlines an ongoing collaborative effort among the Compact participants to foster sustainability and climate resilience on a regional scale. The Compact participants include local communities, regulatory agencies, and the counties of Broward, Miami-Dade, Monroe, and Palm Beach.

5.2 Sea Level Rise

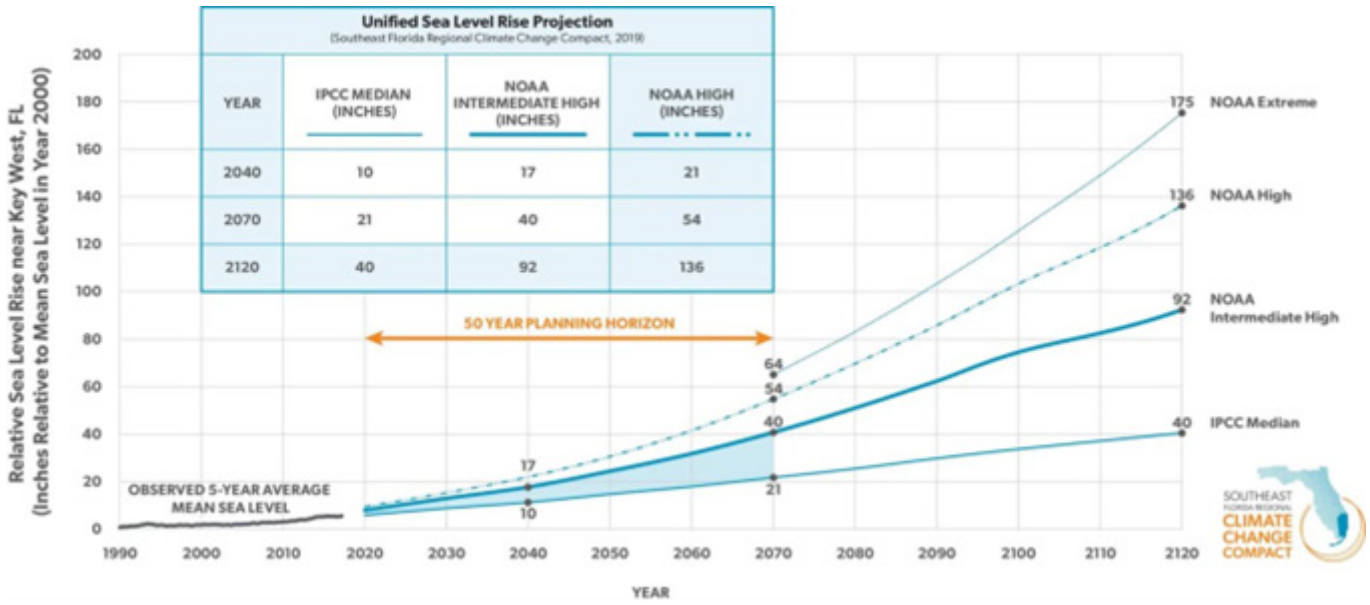
The City of Doral is located well-inland from the Atlantic Ocean and, at this time, no impacts are expected from sea level rise. However, development of cost-effective sea level rise adaptation strategies to ensure the sustainability of the water supply in Miami-Dade County is critical to the wellbeing of all county residents, including those residents in Doral. A unified projection by the Southeast Florida Regional Climate Change Compact developed in 2019, is illustrated in Figure 5-1. It shows a 10 to 17-inch increase in sea level in the near term, and a 21 to 40 inch rise by mid-century.

In terms of infrastructure, every aspect that is underground or touches the ground will need to be assessed for its vulnerability and, if necessary, protected. This includes basic services, such as provision of drinking water, sewage treatment, electricity and waste disposal.

5.3 Saltwater Intrusion

The Biscayne Aquifer is WASD's, and therefore the City's,

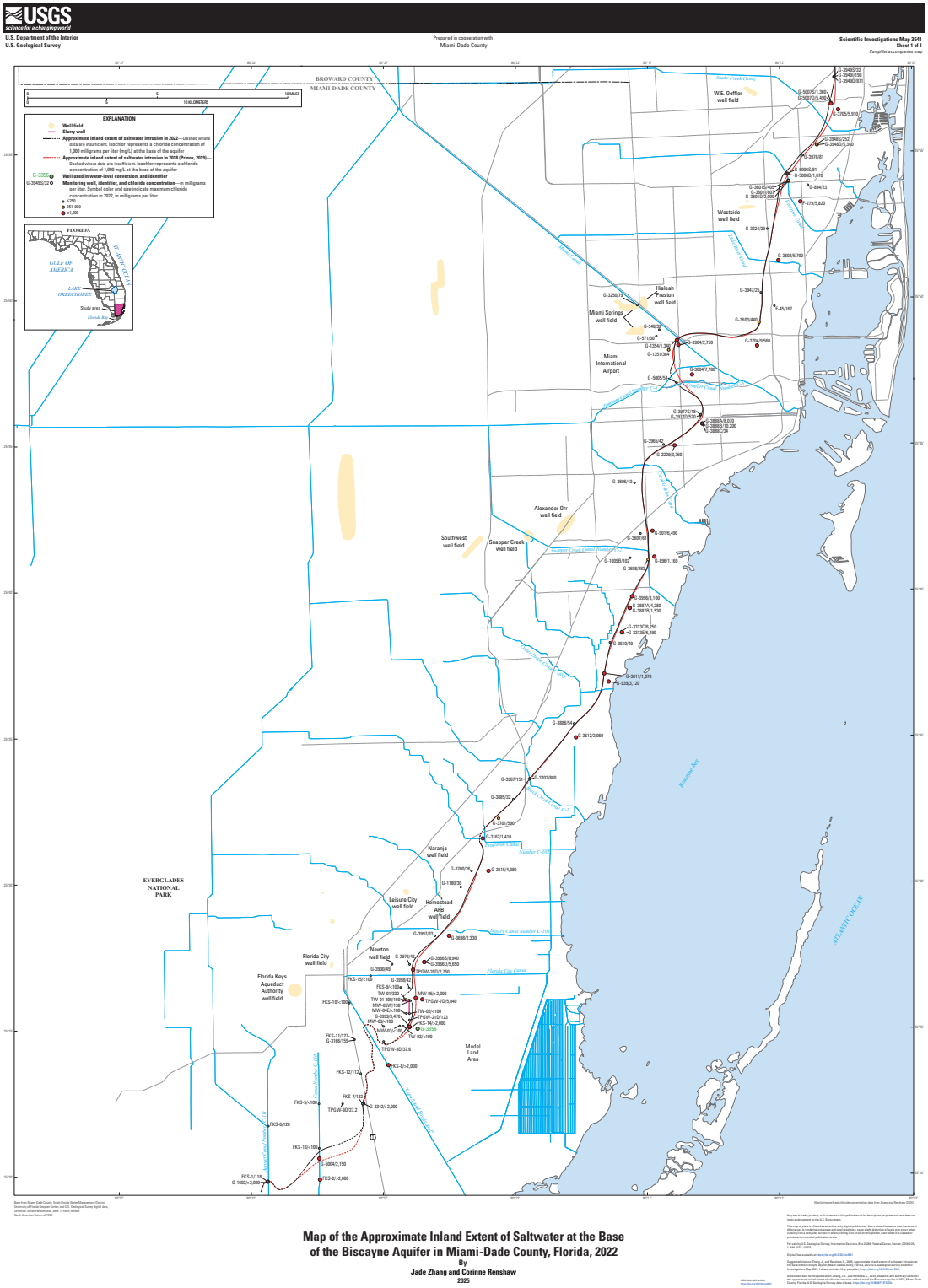
FIGURE 5-1 - SEA LEVEL RISE PROJECTION (SOUTHEAST FLORIDA REGIONAL CLIMATE CHANGE COMPACT, 2019)



primary water supply. This aquifer is shallow, surficial, and highly transmissive. Coastal saltwater intrusion of the aquifer has occurred in eastern parts of Miami-Dade County. In 2018, the U.S. Geological Survey (USGS), in cooperation with Miami-Dade County, mapped the approximate inland extent of saltwater intrusion in eastern Miami-Dade County. This approximation required acquisition and compilation of data collected by the FDEP, Florida Keys Aqueduct Authority, Florida Power & Light Company, MacVicar Consulting Inc., Miami-Dade County Regulatory and Economic Resources, the SFWMD, and the USGS. Data from the selected monitoring wells were entered into a geographic information system (GIS) for analysis and mapping.

The approximate saltwater interface is represented by the 1,000-mg/L isochlor at the base of the Biscayne aquifer. The word "approximate" is used because the spatial distribution of monitoring wells is generally insufficient to create a precise representation. The resulting 1,000 mg/L Isochlor Line in Miami-Dade County is illustrated in Figure 5-3 along with the location of the water supply wellfields owned by WASD and several self-supplied cities. At the toe of the saltwater front, chloride concentrations exceed 1,000 mg/L and thus may restrict the use of and/or require abandonment of wellheads located east of the saltwater intrusion line. Miami-Dade County monitors its movement and the potential impact on the County's water supply.

FIGURE 5-3 – 1,000 MG/L ISOCHLOR LINE IN MIAMI-DADE COUNTY (USGS, 2022)



Map of the Approximate Inland Extent of Saltwater at the Base of the Biscayne Aquifer in Miami-Dade County, Florida, 2022

By

Jade Zhang and Corinne Renshaw

2025

SECTION 8.0 - GOALS, OBJECTIVES, AND POLICIES (GOPS)

There are several elements (Resiliency, Infrastructure, Conservation, Intergovernmental Coordination, and Capital Improvement) in the City of Doral Comprehensive Plan that directly address water resources conservation and management. As part of the update of the City's Water Supply Facilities Work Plan, the City will revise and add new objectives and policies to the Comprehensive Plan to ensure consistency with Miami-Dade Water and Sewer Department Water Supply Facilities Work Plan dated April 2022 and the SFWMD's Lower East Coast Regional Water Supply Plan, adopted on September 23, 2024.

The intent is to evaluate the City's Comprehensive Plan adopted water conservation GOPs to ensure consistency with the 10-Year Water Supply Facilities Plan, WASD and SFWMD Lower East Coast Water Supply Facilities Plan. The following GOPs have been adopted in the original Work Plan and have been reviewed to see if updates or revisions are needed.

- Coordination of land uses and future land use changes with the availability of water supplies and water supply facilities
- Revision of potable water level of service standards for residential and non- residential uses
- Provision for the protection of water quality in traditional and alternative water supply sources
- Revision of priorities for the replacement of facilities, correction of existing water supply and facility deficiencies, and provision for future water supply and facility needs
- Provision for conserving potable water resources, including the implementation of reuse programs and potable water conservation strategies and techniques
- Provisions for improved or additional coordination between a water supply provider and the recipient local government concerning the sharing and updating of information to meet ongoing water supply needs
- Coordination between local governments and the water supply provider in the implementation of alternative water supply projects, establishment of level of service standards and resource allocations, changes in service areas, and potential for annexation
- Coordination of land uses with available and projected fiscal resources and a financially-feasible schedule of capital improvements for water supply and facility projects
- Additional revenue sources to fund water supply and facility projects
- Coordination with the respective regional water supply plan
- Update the Work Plan within 18 months following the approval of a regional water supply plan
- Concurrency requiring water supplies at the building permit stage

The City of Doral established a Concurrency Management System (CMS) to ensure the availability and sufficiency of public facilities and services when development impacts occur and provide a program to prevent the levels of service (LOS) from falling below the adopted LOS standards. Furthermore, it assures the proper timing, location, and design of supportive urban service systems concurrent with the impacts of new development. The following benefits may also be realized with the adoption of a CMS:

- Support consistency of the Capital Improvements Element with the Future Land Use Element;
- Provide for the orderly and cost-effective expansion of public facilities;
- Supplement capital improvement expenditures and taxing structures for capital improvements; and,

- Reduce the possibility of damage to the environment from the use of overburdened facilities.

The Concurrency Management System, which is incorporated in the Land Use Element and Capital Improvement Element, includes guidelines for interpreting and applying LOS standards to applications for development orders and development permits. It also establishes development review procedures in the City's Land Development Code. These procedures may make development approval contingent on the City's ability to provide facilities and services or may require that the developer provide facilities and services to maintain adopted LOS standards. Petitioners must supply public facility impact information with their development applications. City staff reviews and verifies the project information, comparing it with public facility capacity data and anticipated committed development impacts to ensure that adopted LOS standards will be maintained if the development application is approved. If LOS will not be maintained, the petition is denied unless the applicant presents revised plans demonstrating that the new development shall:

- Be served with all requisite public facilities concurrent with the impacts of development;
- Provide LOS for all requisite facilities that are compliant with the City's adopted LOS standards; and
- Shall not cause a reduction in the levels of service from existing infrastructure below minimum adopted thresholds.

The proposed amendments to the policies relevant to the provision of water supply to City of Doral residents and businesses, including water conservation practices, are contained in the City of Doral Comprehensive Plan.

SECTION 9.0 - CAPITAL IMPROVEMENT PROJECTS AND SCHEDULE

Presently the City has no water facility project programmed in their 5-year Schedule of Capital Improvements. The table below is of the County proposed capital projects.

The federal and state governments have contributed to the restoration of the Everglades and Biscayne Bay ecosystems in partnership with SFWMD and US Army Corps of Engineers to restore protect and preserve water resources in southern Florida.

No.	Functions	Hialeah/Preston WTP	Alexander Orr Jr. WTP	Various Water Transmission Mains	Water Distri-bution System Extension	Water System Upgrades	Small Diameter Water Mains Enhacements Program	Water Master Plan
1	Project Number	1050	1051	1055	1060	1067	1084-101678	1084-102193
2	Current Bond/ Fund Allocation	$ 179,379,613	$292,774,945	$5,163,420	$ 287,572,335	$ 150,744,000	$ 271,477,620	$ 5,089,440
3	Expenditures as of 9.30.2020	$ 24,357,212	$ 30,698,857	$ -	$ 4,826,213	$ 34,595,500	$ 12,253,828	$ 33,665
4	Remaining Bond/Fund Allocation	$ 155,022,401	$262,076,088	$5,163,420	$ 282,746,122	$ 116,148,500	$ 259,223,792	$5,055,775
5	Projections							
5.1	2024-2025	$ 11,359,671	$ 13,089,519	$2,500,000	$ 28,787,657	$ 28,095,500	$ 14,900,000	$1,500,000
5.2	2025-2026	$ 27,823,589	$ 22,766,558	$ 598,664	$ 33,596,439	$ 24,803,000	$ 15,900,000	$ 1,000,000
5.3	2026-2027	$ 19,095,402	$ 21,851,631	$300,000	$ 27,000,000	$ 10,650,000	$ 17,100,000	$ 789,440
5.4	2027-2028	$ 17,463,655	$ 17,062,633	$ 529,328	$ 26,800,000	$ 10,650,000	$ 17,700,000	$ 800,000
5.5	2028-2029	$ 17,795,286	$ 22,946,980	$1,235,428	$ 27,362,026	$ 10,650,000	$ 19,700,000	$ 966,335
5.6	2029-2030	$ 20,850,000	$ 29,897,621	$ -	$ 26,600,000	$ 10,650,000	$ 21,200,000	$ -
5.7	2030-2031	$ 20,000,000	$ 31,490,342	$ -	$ 26,600,000	$ 10,650,000	$ 37,253,846	$ -
5.8	2031-2032	$ 20,634,798	$ 30,000,000	$ -	$ 26,000,000	$ 10,000,000	$ 49,000,000	$ -
5.9	2032-2033	$ -	$ 43,000,000	$ -	$ -	$ -	$ 37,500,000	$ -
5.1	2033-2034	$ -	$ 29,970,804	$ -	$ -	$ -	$ 28,969,946	$ -
6	Future	$ -	$ -	$ -	$ -	$ -	$ -	$ -
7	**Total**	**$ 155,022,401**	**$ 262,076,088**	**$5,163,420**	**$ 222,746,122**	**$ 116,148,500**	**$ 259,223,792**	**$5,055,775**

Source: Miami Dade Water and Sewer Department. Adopted 2025-2034 Capital Budget and Multi-Year Capital Plan Projections by Project and Sub-Project: by Year - Water As of September 30, 2024.

SECTION 10.0 - PLAN IMPLEMENTATION AND MONITORING

The City of Doral Water Supply Facilities Work Plan with its 10 year planning horizon will be updated every five years based on the 18 month timeframe of the adopted Lower East Coast Regional Supply Plan. The City will monitor the implementation of the plan as it does with it's Comprehensive Plan. The review will also ensure consistency with the Miami Dade County WSP and the SFWMD Lower East Coast WSP.

Miami Dade Water and Sewer Department

10-Year Water Supply Facilities Work Plan

April 2022

Report

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Executive Summary

This update to the Miami-Dade Water and Sewer Department's (WASD) Water Supply Facilities Work Plan has been prepared in accordance with the requirements set forth in Section 163.3177(6)(c)3 of the Florida Statutes for a 10-year planning horizon. Said statutory provision requires that local governments to adopt a water supply work plan that identifies traditional and alternative water supply projects, and conservation and reuse measures necessary to meet projected water demands. The work plan is updated on a five-year cycle and within 18-months of an adopted update to the South Florida Water Management District's regional water supply plan. The most recent Lower East Coast (LEC) Regional Water Supply Plan was adopted by the South Florida Water Management District Governing Board in November 2018.

The 10-Year Water Supply Facilities Work Plan Update describes WASD's existing water supply systems. The document also provides a plan for implementing additional water supply initiatives (including the development of traditional and alternative water supplies), as necessary, to serve existing and future development

This Water Supply Facilities Work Plan Update includes the following primary sections:

- Section 1 - Introduction
- Section 2 – Water Service Area
- Section 3 – Existing Water Supply Facilities
- Section 4 – Population and Water Demand Projections
- Section 5 – Planned Water Supply Facilities
- Section 6 – Climate Change and Sea Level Rise Plan

The plan focuses on the evolution of water demands within Miami-Dade County and required actions to meet anticipated future needs. It should be noted that the County's projected finished water demands are now significantly lower than anticipated when the first 20-year water use permit (WUP) application was submitted to South Florida Water Management District (SFWMD) in 2007.

The decrease in water demands has been a result of numerous drivers internal and external to WASD. Over more than a decade, Miami-Dade County's per capita water consumption and overall drinking water production have decreased significantly. The evolution of water demands can primarily be attributed to the following factors:

- Deceleration of population growth
- WASD's water conservation program yielding reduced per capita water consumption
- Permanent year-round landscape irrigation restrictions
- Landscape ordinances requiring Florida Friendly landscaping
- Florida Building Department Code changes requiring high efficiency fixtures and appliances for new construction
- Evolving trends in housing demographics (multifamily construction versus single family homes), and water use practices
- Increases in water and sewer rates

Miami-Dade County has been highly proactive in driving water efficiency and water conservation with the intent of reducing per-capita consumption. Over the past several years, the scale of redevelopment within the County has been significant, leading to the replacement of older housing stock and commercial and industrial space with new and more efficient construction. Since 2009, the county's building code, specifically Section 8-31 and 32-84, requires the installation of water efficient fixtures and high efficiency appliances. In 2007, the County developed a water conservation program that provides rebates to residents that install high efficiency faucets, toilets and showerheads in properties constructed prior to 1996. It also includes rebates for water efficient upgrades to irrigation systems in single family and large properties throughout the County. Additionally, lawn watering has been limited to two days per week (more stringent than the State's three days a week rule) and development within the county must comply with landscape standards in sections 18-A and 18-B which encourage Florida Friendly Landscaping, reducing outdoor water use. The County code was also modified to authorize the use of submetering in multifamily residential developments, requiring a meter installed in each individual dwelling unit instead of being billed by a single master meter. Use of submeters enhances monitoring and encourages water conservation.

Miami-Dade County Comprehensive Development Master Plan (CDMP) land use policies have also been instrumental in driving decreases in water demand and wastewater generation. Over the past two decades, land use policy has incentivized high density development in areas of existing infrastructure and public services (i.e. transit, sanitary sewer, etc.). This in turn has led to a pivot from growth in suburban single-family homes with higher average water consumption, to multifamily buildings including condominiums, apartments, and in some cases, micro-apartments which have much lower water demands. These strategies have led to a significant decrease in per capita water consumption throughout the county.

Beyond the greater County policy efforts to maximize efficiency and reduce water consumption, WASD has been very successful in executing its Water Use Efficiency Plan (Plan). The Plan, developed as a strategy to decrease consumption while avoiding costly alternative water supply projects, was developed in 2007 and includes a water conservation element implementing best management practices (BMPs) for both indoor and outdoor water use throughout the County. High efficiency fixture rebates, targeting properties constructed before 1996, offer residents a financial incentive to reduce indoor water use by installing high efficiency toilets, faucets and showerheads. Landscape irrigation rebates evaluate existing in-ground irrigation systems and recommend changes that reduce outdoor water use. In addition to indoor and outdoor BMPs, the conservation program also includes an education component, to organizations throughout the County (i.e. homeowner associations, county agencies, municipalities, schools, colleges, universities, not for profits, etc.) to inform residents about the importance of water conservation.

As a result of these efforts, the County has achieved 16.19 MGD of water savings through fiscal year 2021. The Plan also contains a water loss reduction component including an annual leak detection survey of the county's entire water distribution system. In addition to standard operating procedures, advanced technology is used to detect leaks including the implementation of mobile and fixed network systems. Leaks detected are categorized by priority with the highest priority leaks being repaired first. As a result, several hundreds of leaks are identified and repaired annually.

Since the 2007 WUP, WASD has requested several modifications to the permit to reflect new population data, revised water demand projections and alternative water supply projects to support the projected water demands. The most recent WUP modification was issued on March 8, 2022 with an expiration date of

December 27, 2065 and an annual allocation of 148,018.00 million gallons (405.53 MGD) to year 2042. The WUP modification includes optimization of Biscayne Aquifer water supplies through improved wellfield operations and the C-51 Reservoir project. The wellfield optimization allows for the maximum use of wet and dry season non-regional flows throughout Miami-Dade County by leveraging operational flexibility between Miami-Dade WASD's water treatment plants and wellfields. This Water Supply Facilities Work Plan has been prepared considering water supplies available to WASD in the utility's current WUP and confirms that currently available water supplies are sufficient to meet demands through the 10-year planning period.

This work plan also details WASD's assessment and planning for sea level rise and climate change with relation to water supply. The primary concern to WASD's water supply is saltwater intrusion into the Biscayne aquifer, the primary source of drinking water in Miami-Dade County. Results of the evaluations and analyses completed to date indicate that within the next thirty years, WASD will be able to continue uninterrupted operation of its wellfields and water treatment facilities as designed. Groundwater modeling indicates that even considering high levels of projected sea level rise, WASD's wellfields will not be impacted by saltwater intrusion. Further modeling is currently underway to extend the planning scenarios through the year 2070. These simulations incorporate anticipated impacts from climate change, such as increases/decreases in annual precipitation and extreme weather events.

Section 1

Introduction

Miami-Dade County (County) is continuing to experience growth, albeit at a more moderate rate than past decades. The Miami-Dade Water and Sewer Department (WASD) provides drinking water to approximately 2.4 million customers in the County. Because of population growth, complex environmental issues and regulatory and statutory requirements, WASD is updating its comprehensive water supply development plan for a 10-year planning horizon. The previous Water Supply Facilities Work Plan was prepared in November 2014 (Revised January 2015) and adopted by the County's Board of County Commissioners on February 4, 2015.

1.1 Background

Florida Statute (F.S.) Chapters 163-Intergovernmental Programs and 373-Water Resources, require coordination of water supply and land use planning. The statutes link regional water supply plans prepared by the water management districts and the comprehensive plans prepared by local governments, to provide a comprehensive planning framework for the State of Florida.

F.S. Sections 373.709 163.3177(6)(c)3 require that local water supply work plans be updated within 18 months after a water management district's governing board approves an updated regional water supply plan. The update intends to reflect changes in the regional plan that may affect local water supply and corresponding work plans. The current statutory provisions direct local governments to undertake the following actions with regards to water supply:

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. Revise the Potable Water Sub-Element to adopt a water supply facilities work plan covering at least a 10-year planning period to meet existing and projected demand. The work plan should address those water supply facilities for which the local government has responsibility and include the facilities needed to develop alternative water supplies. The work plan should also identify conservation and reuse measures to meet future needs. [Section 163.3177(6)(c), Florida Statutes.]

3. Revise the Conservation Element to assess current and projected water needs and sources for at least a 10-year planning period. The analysis must consider the existing levels of water conservation, use, and protection and the applicable policies of the water management district, and the district's approved regional water supply plan. In the absence of an approved regional water supply plan, the analysis must consider the district's approved water management plan. [Section 163.3177(6)(d)3, Florida Statutes.]

4. Revise the Capital Improvements Element to identify capital improvements projects to be implemented in the first 5 years of the work plan for which the local government is responsible, including both publicly and privately funded water supply projects necessary to achieve and maintain adopted level of service standards; and adopt a five-year schedule of capital improvements to include those projects as either funded or unfunded, and if unfunded, assign a level of priority for funding. [163.3177(3)(a)4, Florida Statutes.]

5. Revise the Intergovernmental Coordination Element to adopt principles and guidelines to be used to coordinate the comprehensive plan with the regional water supply authority (if applicable) and with the applicable regional water supply plan. [163.3177(6)(h)1, Florida Statutes.]

6. During the Evaluation and Appraisal review, determine if comprehensive plan amendments are necessary to reflect statutory changes related to water supply and facilities planning since the last update to the comprehensive plan. If necessary, transmit the amendments to incorporate the statutory changes as appropriate. [Section 163.3191(1) and (2), Florida Statutes.]

7. 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.] Local governments should update their comprehensive plans and land development regulations as soon as possible to address this water supply concurrency requirement.

This Water Supply Facilities Work Plan Update has the objective of satisfying portions of the above statutory requirements (other portions are satisfied through existing policies in the County's Comprehensive Development Master Plan) and, as stated in Item 1 above, to coordinate with the Lower East Coast (LEC) regional water supply plan. The 2018 LEC Water Supply Plan Update was adopted by the South Florida Water Management District (SFWMD) Governing Board in November 2018.

1.2 Purpose and Objectives

The purpose of this Water Supply Facilities Work Plan Update is to present WASD's current water supply systems and to provide a plan for implementing water supply facilities, including the development of traditional and alternative water supplies as necessary, to serve existing and future development. The water supplies presented within the plan were developed after incorporating demand reductions related to water conservation.

The plan incorporates information related to wholesale and retail municipal customers that purchase water from WASD, as well as water suppliers that provide water to portions

of Miami-Dade County: City of North Miami, City of North Miami Beach, City of Hialeah, City of Homestead and Florida City. WASD will continue to coordinate and provide information to local governments in Miami-Dade County to assist with the preparation of their respective Work Plan updates.

This Work Plan is a stand-alone document that will be adopted by reference into the County's Comprehensive Development Master Plan. The update to the Work Plan is to be revised every five years and within 18 months after the SFWMD Governing Board approves an updated LEC regional water supply plan.

This Water Supply Facilities Work Plan Update includes the following primary sections:

- Section 1 - Introduction
- Section 2 – Water Service Area
- Section 3 – Existing Water Supply Facilities
- Section 4 – Population and Water Demand Projections
- Section 5 – Planned Water Supply Facilities
- Section 6 – Climate Change

Section 2

Water Service Area

2.1 WASD Service Area

The Miami-Dade Water and Sewer Department's water service area consists of an interconnected system (see Section 2.1.4, **Table 2-1**) and thus functions as a single service area. However, for the convenience of discussing existing facilities, the service area may be divided into three subareas by water treatment facilities: the Hialeah-Preston area serving the northern part of Miami-Dade County, the Alexander Orr, Jr. area serving the central and portions of southern Miami-Dade County and the South Dade area (formerly known as the Rex Utility District) serving the southernmost portions of Miami-Dade County as shown in **Figure 2-1**.

Within the WASD service area, there are 15 wholesale customers. Fourteen (14) of the fifteen (15) wholesale customers have executed 20-year water use agreements, and one (1) has executed a 30-year water agreement. The water use agreement between WASD and the City of Hialeah was executed on July 27, 2018. The City of North Miami Beach ceased purchasing water from WASD in 2008 and has a 30-year wholesale agreement with WASD to purchase water on an as needed basis. The City of North Miami has a wholesale water agreement with WASD to supply water to approximately 30 percent of its service area. The City of Miami Springs is no longer a wholesale customer of WASD, as the water and sewer infrastructure was transferred to the County in July 2008. **Table 2-2** identifies the 15 wholesale customers and the execution and termination date of their respective wholesale agreements.

In addition to WASD, there are five (5) other water suppliers within Miami-Dade County that provide water to portions of unincorporated Miami-Dade County and within respective municipal boundaries. These include Florida City, City of Homestead, City of Hialeah, City of North Miami and City of North Miami Beach.

All municipal water producers within Miami-Dade County have water use agreements with WASD, with the exception of Florida City. In 2010, the City of Homestead entered into a 20-year water use agreement with WASD to purchase up to 3 MGD to meet the demands of its retail water customers. The water furnished is received by the City of Homestead at the interconnection point located at SW 137th Avenue and 288th Street.

2.1.1 Hialeah-Preston Subarea

The Hialeah-Preston (H-P) subarea is comprised of dedicated low-pressure pipelines, remote storage tanks, pumping facilities and high-pressure systems. This system delivers water to Hialeah, Miami Springs, the City of Miami and other portions of northeastern Miami-Dade County, shown on Figure 2-2, generally north of Flagler Street. The Hialeah Reverse Osmosis (R.O.) plant was

completed in October 2013 and is providing water to a portion of the City of Hialeah and unincorporated Miami-Dade County.

2.1.2 Alexander Orr, Jr. Subarea

The Alexander Orr, Jr. (AO) subarea is comprised of a high-pressure system consisting of two major piping loops. This system delivers water to nearly all of Miami-Dade County south of approximately Flagler Street and north of SW 272nd Street, including the areas of Virginia Key, Fisher Island, the Village of Key Biscayne and, upon request, to the City of Homestead as shown on **Figure 2-3.**

2.1.3 South Dade Subarea

The South Dade subarea consists of small distribution systems that evolved around each individual water treatment plant (WTP) and their distinct service areas. These systems deliver water almost exclusively to unincorporated Miami-Dade County south of S.W. 272nd Street and east of S.W. 197th Avenue.

In addition to WASD, Homestead and Florida City also provide water to the South Dade area of the County. Florida City provides water service within its incorporated boundaries and to a small portion of unincorporated Miami-Dade County. Florida City also purchases water from the City of Homestead to service a small portion of Florida City's service area on the southeast corner of U.S. 1 and S.W. 328th Street. The City of Homestead provides water within its municipal boundary and for a portion of unincorporated Miami-Dade County including the Redavo development located at SW 296th Street and SW 187th Avenue. This development is within WASD's service area and consists of 107 homes with an approximate population of 310. **Figure 2-4** shows the current South Dade subarea.

Figure 2-1: WASD Water Service Area and Wholesale Customers

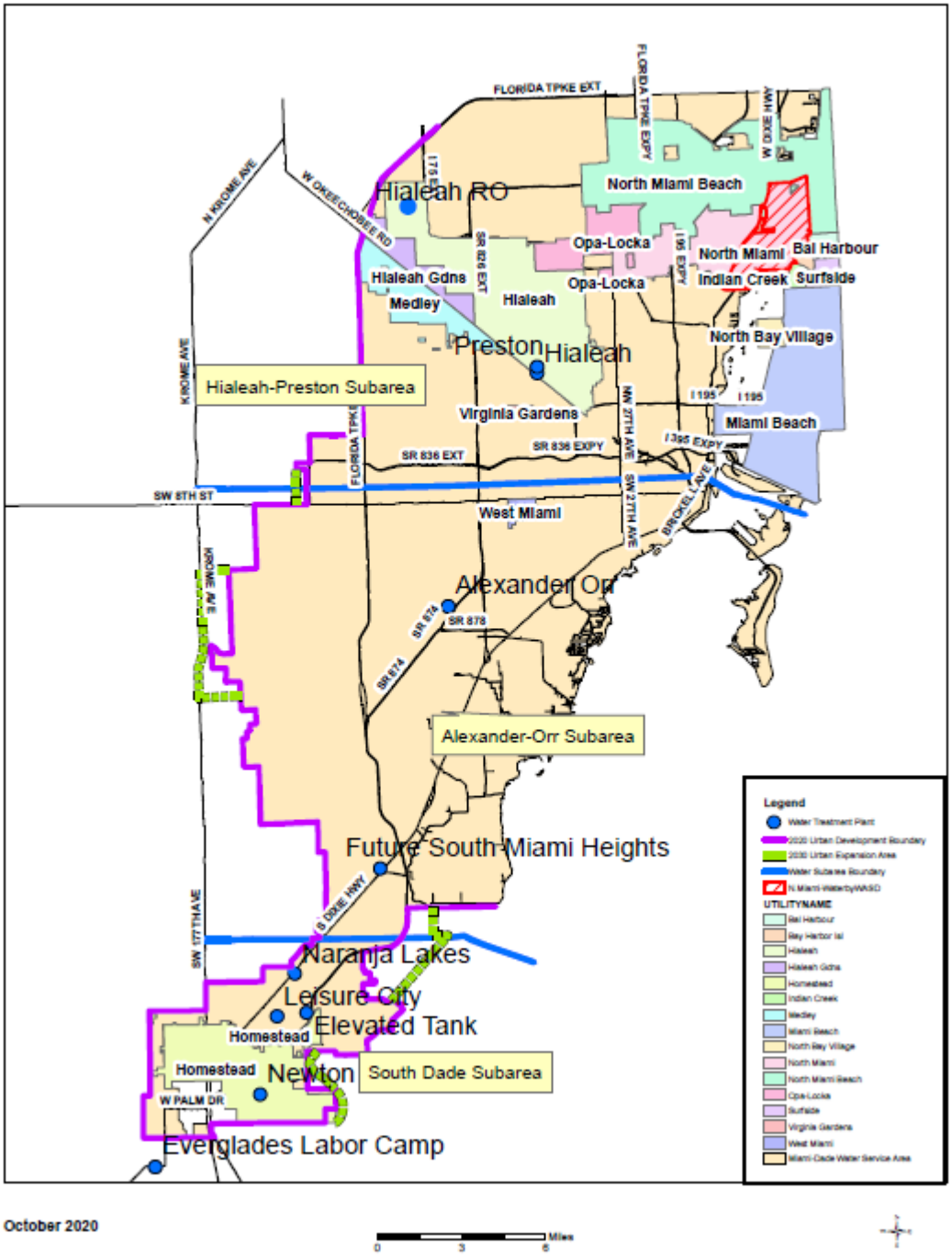
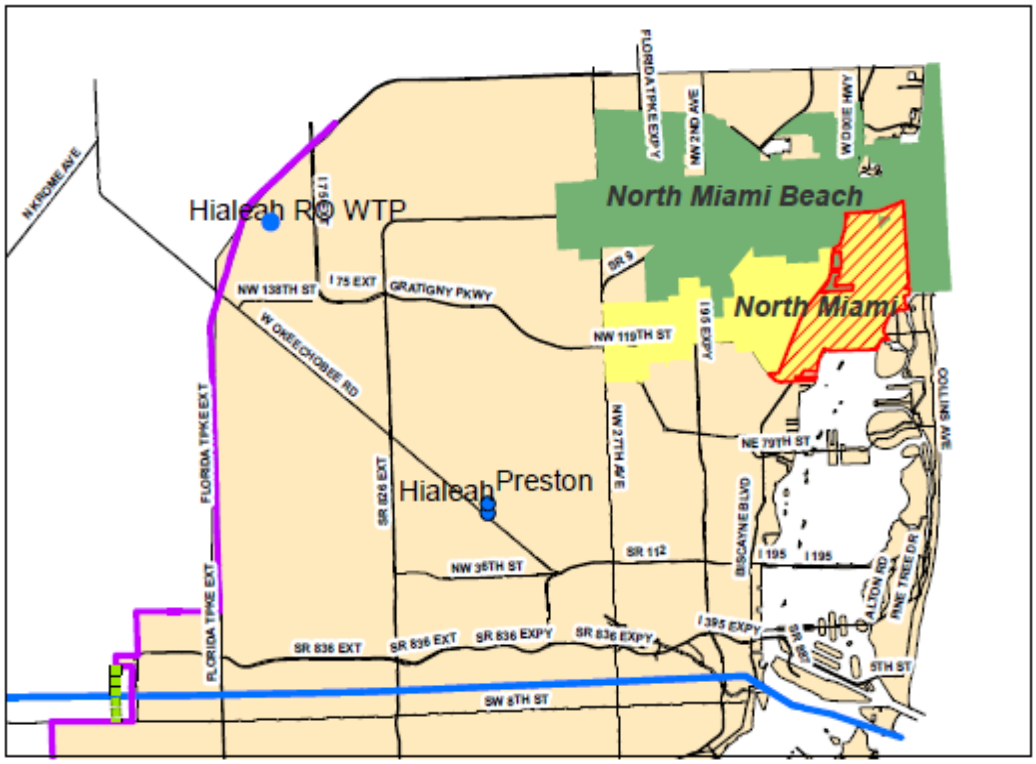


Figure 2-2:
Hialeah-Preston/Hialeah R.O. Sub-Area and Water Treatment Plants (WTP)



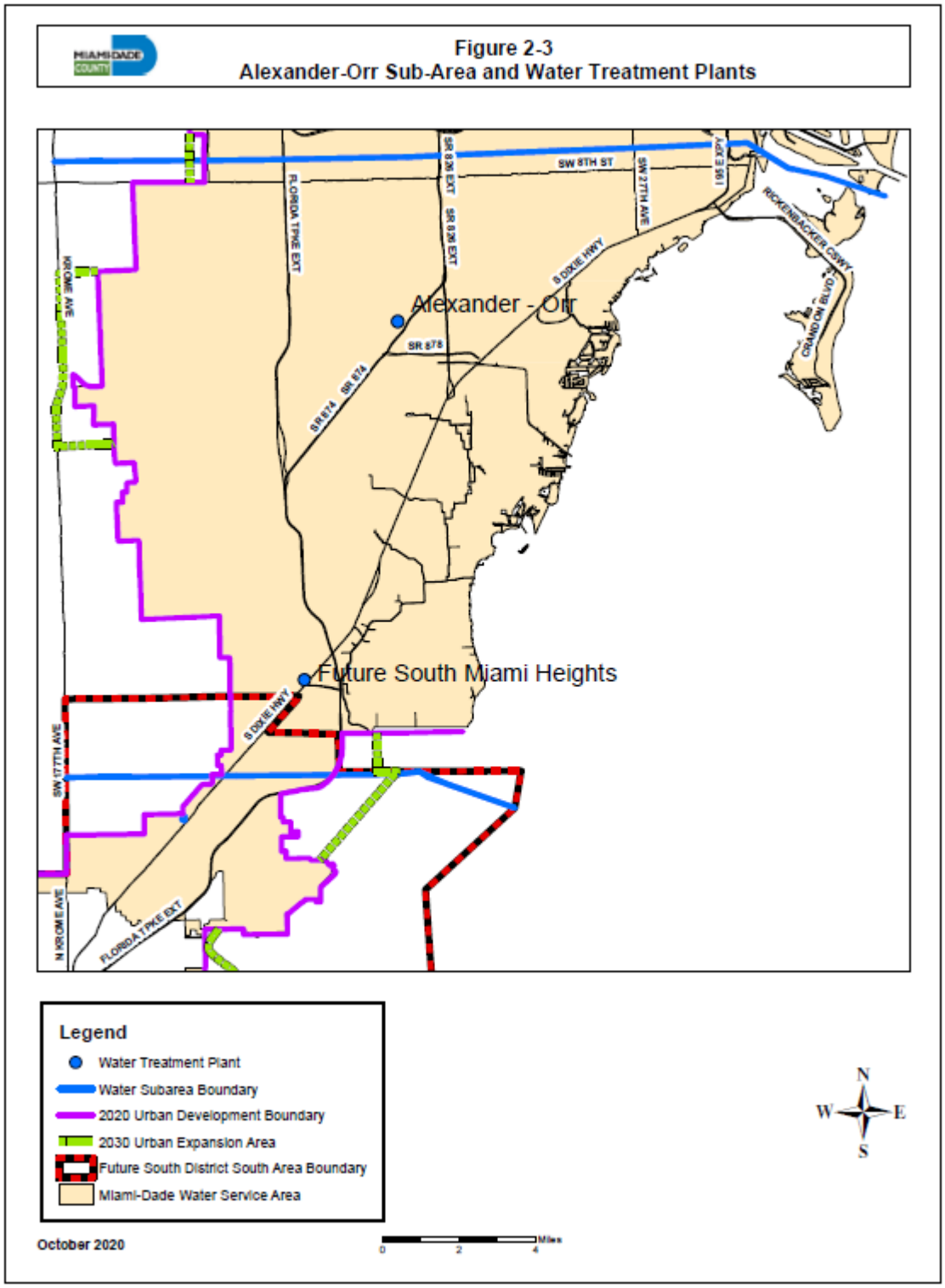


Figure 2-3
Alexander-Orr Sub-Area and Water Treatment Plants
Alexander - Orr
Future South Miami Heights
SW 8TH ST
SR 836 EXT
SR 836 EXT
SW 27TH AVE
LEJEUNE
RICKENBACKER CSWY
CRANDON BLVD
S DIXIE HWY
FLORIDA TPKE EXT
KROME AVE
SR 878
SR 874
SR 874
SW 177TH AVE
N KROME AVE
FLORIDA TPKE EXT
Legend
Water Treatment Plant
Water Subarea Boundary
2020 Urban Development Boundary
2030 Urban Expansion Area
Future South District South Area Boundary
Miami-Dade Water Service Area
N
W
E
S
October 2020
0
2
4
Miles

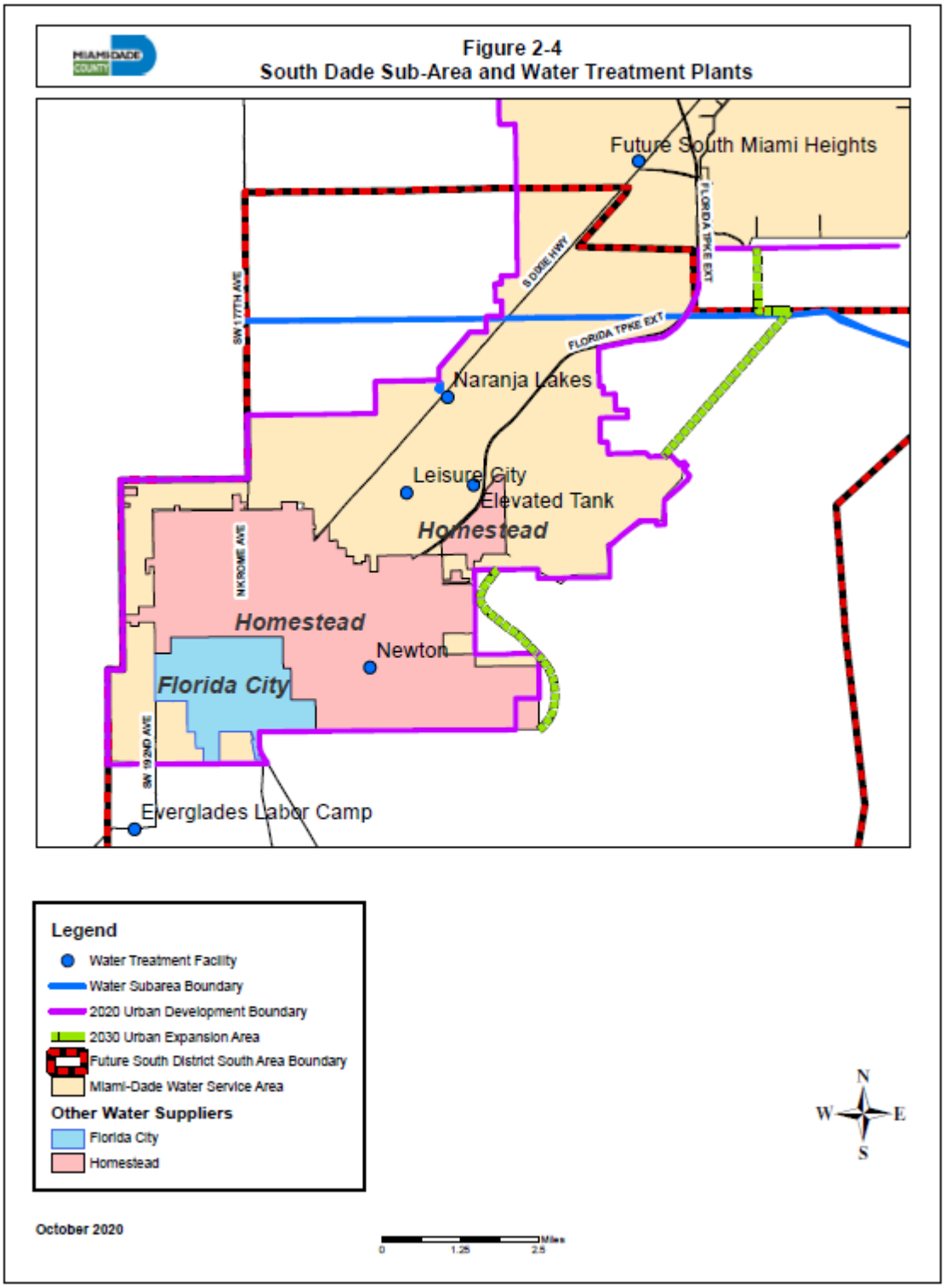


Figure 2-4
South Dade Sub-Area and Water Treatment Plants
Future South Miami Heights
FLORIDA TPKE EXT
S DIXIE HWY
SW 177TH AVE
FLORIDA TPKE EXT
Naranja Lakes
Leisure City
Elevated Tank
Homestead
NIXROME AVE
Homestead
Newton
Florida City
SW 192ND AVE
Everglades Labor Camp
Legend
Water Treatment Facility
Water Subarea Boundary
2020 Urban Development Boundary
2030 Urban Expansion Area
Future South District South Area Boundary
Miami-Dade Water Service Area
Other Water Suppliers
Florida City
Homestead
N
W
E
S
October 2020
0
1.25
2.5
Miles

2.1.4 Interconnects

The Hialeah-Preston and Alexander Orr, Jr. WTPs are connected via their distribution systems. The major physical barrier separating the Hialeah-Preston and Alexander Orr, Jr. facilities is the Miami River/8th Street Canal. Table 2.1 lists the interconnects between Hialeah-Preston and Alexander Orr, Jr. distribution systems.

Table 2.1
Hialeah-Preston and Alexander Orr, Jr. Distribution System Interconnects

Location	Interconnect Pipeline Diameter (inches)
NW 1st Pl / NW 1 Ave / SW 2 Ave	48/42
Biscayne Blvd	24
NW 10th Ave and North River Dr / NW 14 Ave	30/24
NW 11th Ave and South River Dr / NW 14 Ave	20/24
NW 27th Ave and South River Dr	20
NW 30th Ave and NW 20th St / Delaware Pkwy	36/30
NW 72nd Ave /Tamiami Blvd	16/24
NW 87th Ave	24/16
NW 107th / 109th /112th Ave	36
NW 107th / 114th Ave	16

The Hialeah-Preston distribution system is interconnected with the Cities of North Miami and North Miami Beach service areas as well.

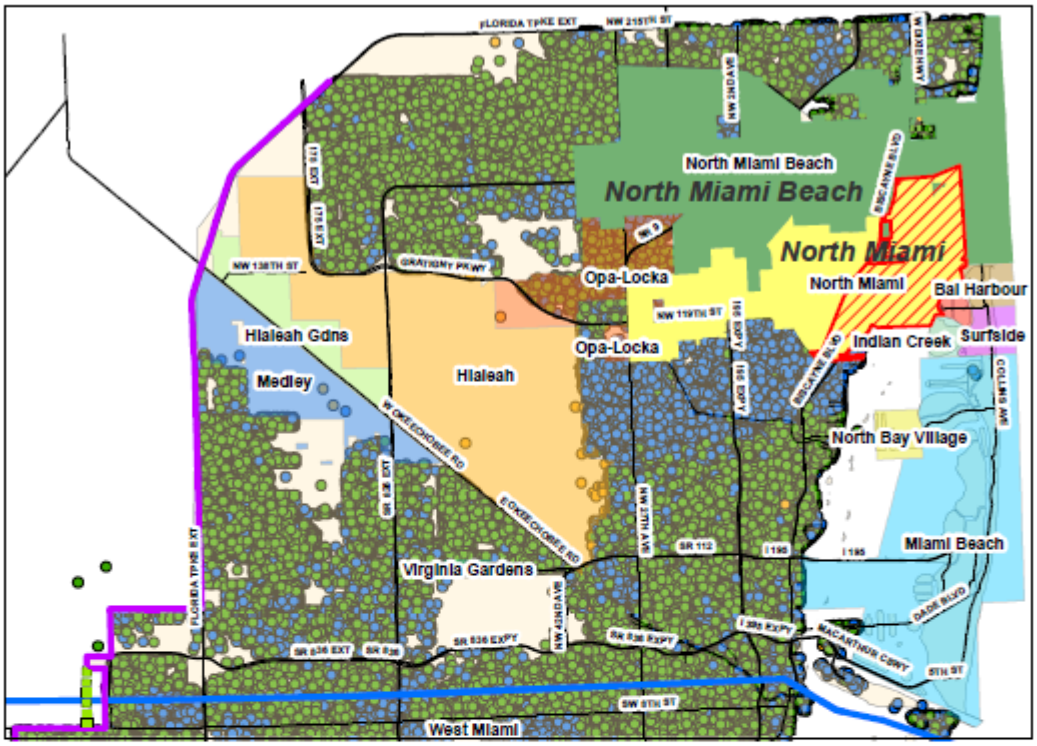
The Alexander Orr, Jr. WTP supplies the southern portion of the Main Regional System. The South Miami-Dade Water System is also located in the southern portion of the Miami-Dade County. Currently, the South Dade subarea is isolated from the Main Regional Water System by the closing of key water system valves. There is generally no intermixing between the two systems, however when required, valving allows the shifting of flows.

2.1.5 Self-Supply Water Systems

There are various self-supply water systems within WASD's service area. **Figures 2-5, 2-6 and 2-7** depict the properties within WASD's retail sub- service areas that have a water account. Within the sub-service areas, there are pockets that are either vacant land, bodies of water or properties connected to well water. The properties within WASD's Wholesale Customers service area that are connected to water are not included, as account information for those areas is not available to WASD. However, WASD will be coordinating with its wholesale customers to obtain account data and will be undertaking a future GIS (Geographic Information System) project to identify the self-supply water systems within WASD's retail and wholesale customers service area.

At this time, WASD has no planned projects to bring infrastructure to those properties connected to well water. Water infrastructure for future development within WASD's retail service area is constructed and conveyed to the Department by the developer.

Figure 2-5
Hialeah-Preston/Hialeah R.O. Sub-Area - WASD Water and Sewer Accounts



Legend
Source: County GIS

- 2030 Urban Expansion Area
- 2020 Urban Development Boundary
- Water Subarea Boundary
- N.Miami-WaterbyWASD
- Miami-Dade Water Service Area

Other Water Suppliers

- North Miami
- North Miami Beach

Wholesale Customer Water Service Area

- Bal Harbour
- Bay Harbor Isl
- Hialeah
- Hialeah Gdns
- Indian Creek
- Medley
- Miami Beach
- North Bay Village
- North Miami
- North Miami Beach
- Opa-Locka
- Surfside
- Virginia Gardens

WASD Account Type

- Sewer
- Water
- Water and Sewer

N
W E
S

October 2020

0 1.75 3.5 Miles

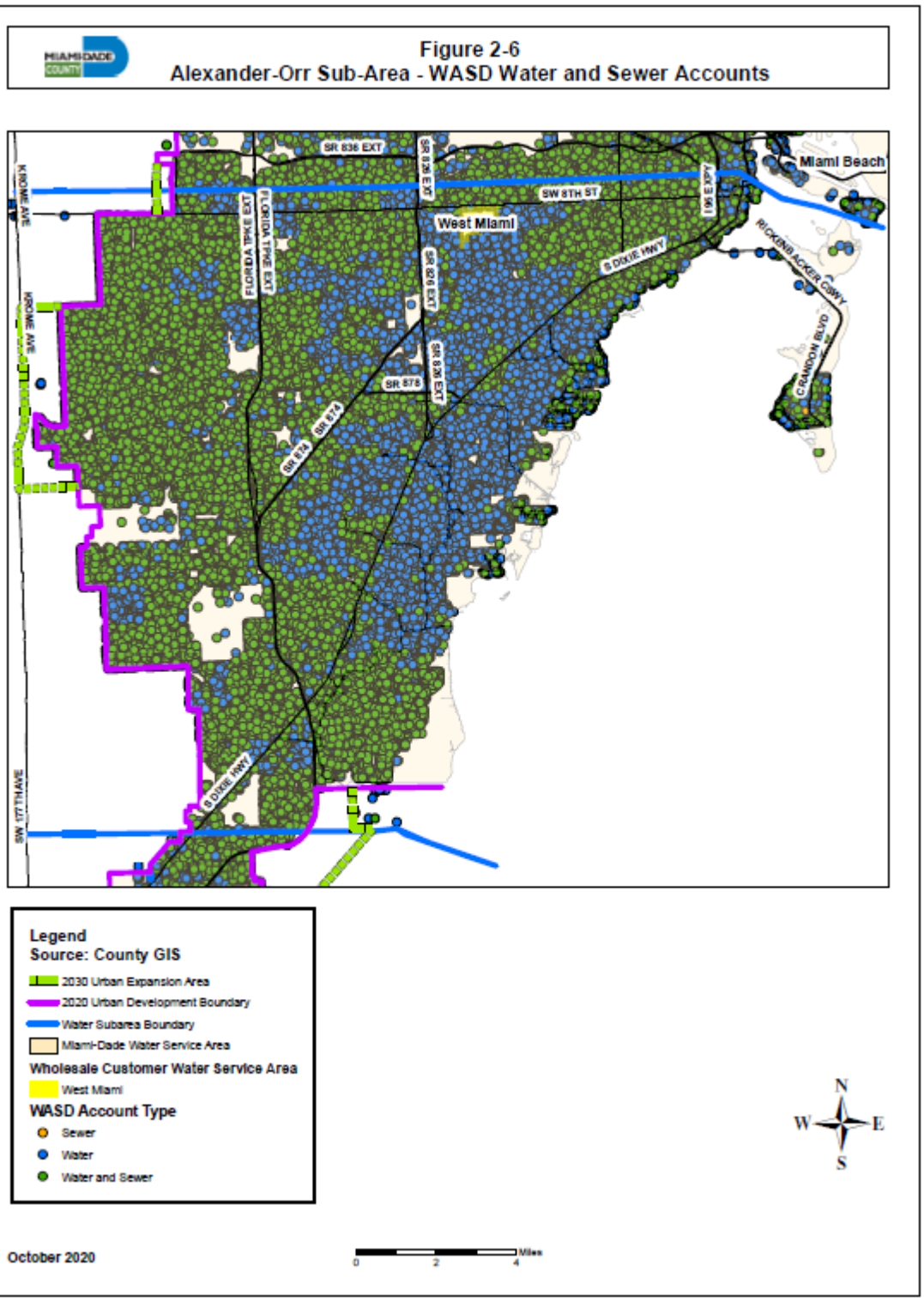


Figure 2-6
Alexander-Orr Sub-Area - WASD Water and Sewer Accounts
SR 836 EXT
SW 8TH ST
West Miami
Miami Beach
FLORIDA TPKE EXT
S DIXIE HWY
SR 878
SR 874
KROME AVE
SW 177TH AVE
RICKENBACKER CSWY
CRANDON BLVD
Legend
Source: County GIS
2030 Urban Expansion Area
2020 Urban Development Boundary
Water Subarea Boundary
Miami-Dade Water Service Area
Wholesale Customer Water Service Area
West Miami
WASD Account Type
Sewer
Water
Water and Sewer
N
W
E
S
October 2020
0
2
4
Miles

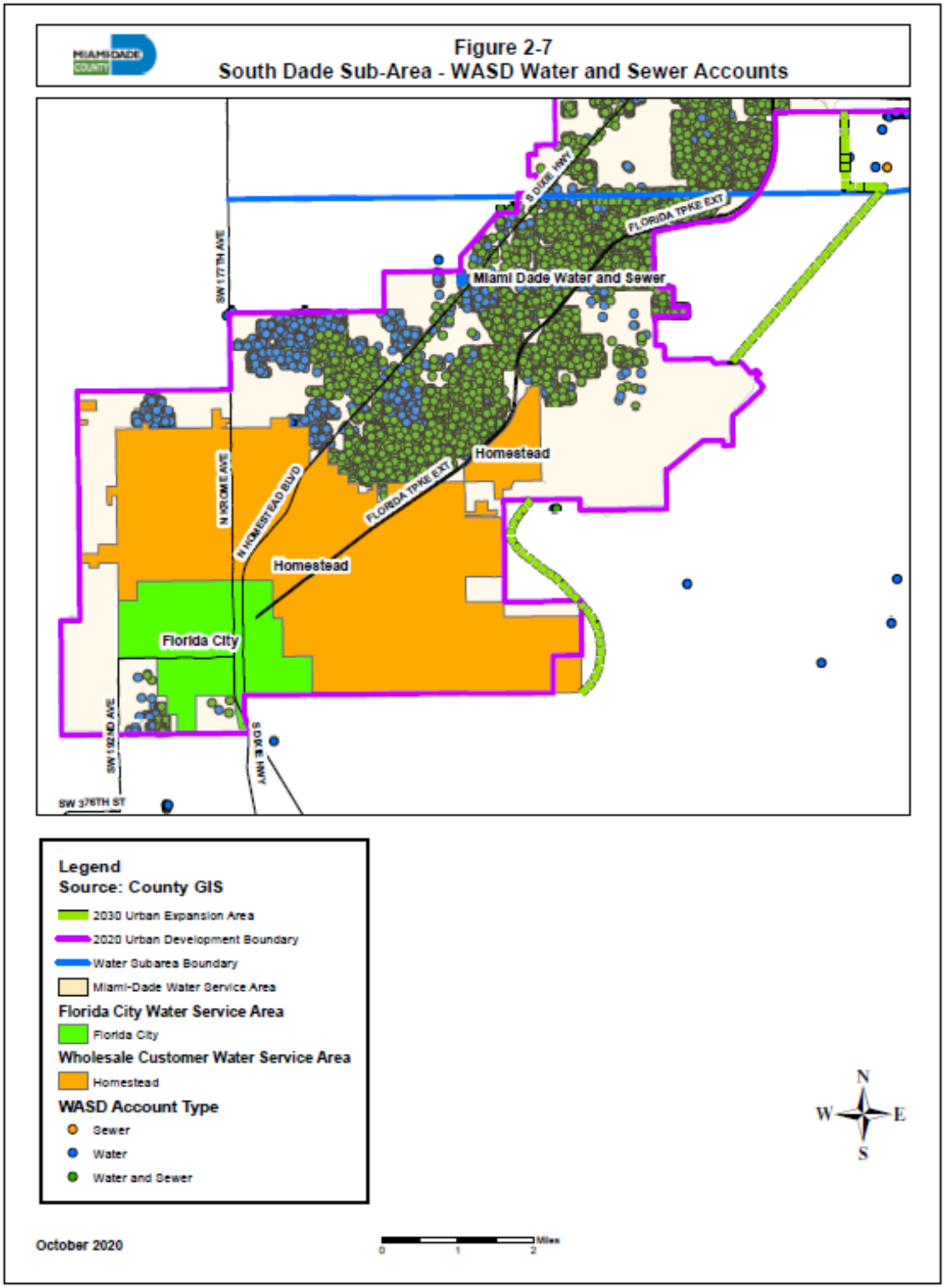


Figure 2-7
South Dade Sub-Area - WASD Water and Sewer Accounts
S DIXIE HWY
FLORIDA TPKE EXT
SW 177TH AVE
Miami Dade Water and Sewer
Homestead
N HOMESTEAD BLVD
N KROME AVE
FLORIDA TPKE EXT
Homestead
Florida City
SW 192ND AVE
S DIXIE HWY
SW 376TH ST
Legend
Source: County GIS
2030 Urban Expansion Area
2020 Urban Development Boundary
Water Subarea Boundary
Miami-Dade Water Service Area
Florida City Water Service Area
Florida City
Wholesale Customer Water Service Area
Homestead
WASD Account Type
Sewer
Water
Water and Sewer
N
W
E
S
October 2020
0
1
2
Miles

2.2 Wholesale Customers

All 15 wholesale water customers within the WASD's service area have large user agreements. These agreements, with the exception of the City of North Miami Beach, are for a 20-year period. The water agreement with the City of North Miami Beach is for a period of 30-years. In 2007, the City of Miami Springs indicated its desire to pursue the transfer of the Miami Springs water and sewer department to the County. Said transfer was approved by the Miami-Dade County Board of County Commissioners (BCC) on July 17, 2008. **Table 2-2** identifies the 15 wholesale customers and the execution and termination date of their large user contracts.

As outlined in the Miami-Dade County Code of Ordinances, Chapter 2, Article XXXVII, Section 2-347, if a private or municipal water or sewer utility proposes to expand its assigned service area, the Director or designee shall determine whether the Department shall release the portion of the service area requested.

Table 2-2 WASD Wholesale Water Agreements for 20 Year Period

Municipality	Execution and Termination Date
Bal Harbour Village (BLH)	07/26/2007-07/26/2027
Town of Bay Harbour Islands (BHI)	07/26/2007-07/26/2027
City of Hialeah (CH)	07/27/2008 – 07/27/2028
City of Hialeah Gardens (HG)	05/04/2007 – 05/04/2027
City of Homestead (HOMSTD)	07/09/2010 – 07/10/2030, 3 MGD Max.
Indian Creek Village (IC)	07/26/2007 – 07/25/2027
Town of Medley (MED)	05/04/2007 – 05/04/2027
City of Miami Beach (MB)	07/29/2008 – 07/29/2028
City of North Bay Village (NB)	06/14/2007 – 06/14/2027
City of North Miami (NM)	07/26/2007 – 07/26/2027
City of North Miami Beach (NMB)	, 03/19/2001 – 03/19/2031, as needed basis
City of Opa-Locka (OPLOC)	05/04/2007 – 05/04/2027
Town of Surfside (SURFS)	07/26/2007 – 07/26/2027
Village of Virginia Gardens (VG)	06/14/2007 – 06/14/2027
City of West Miami (WM)	06/14/2007 – 06/14/2027

2.3 Other Water Suppliers (Non-WASD)

Other water suppliers located in Miami-Dade County have facilities and provide water to portions of Miami-Dade County. These facilities are in the extreme northern and southern portions of the County as shown in **Figure 2-8**. Other water suppliers within the County include:

- City of North Miami
- City of North Miami Beach
- City of Homestead
- City of Hialeah
- Florida City

The Florida Keys Aqueduct Authority (FKAA) has facilities in the southern portion of the County to serve Monroe County. These facilities include supply wells, a treatment facility and a transmission main to serve Monroe County.

2.3.1 City of North Miami

The City of North Miami provides water service to parts of northern Miami-Dade County within its municipal boundaries, as well as areas outside of its municipal boundaries extending into the northwestern portions of unincorporated Miami-Dade County.

The City's service area consists of a high-pressure distribution system comprised of three main distribution lines, which are interconnected. The service area is generally bounded by NE 163rd Street to the north, Biscayne Bay to the east, NW 105th Street to the south, and NW 27th Avenue to the west. It serves a population of over 81,000 people in a 13 square-mile area. The City of North Miami provides water service within its municipal boundaries, as well as to the Village of Biscayne Park, a small area of Miami Shores, and portions of unincorporated Miami Dade County. The City currently purchases approximately 45% of their water from WASD for redistribution.

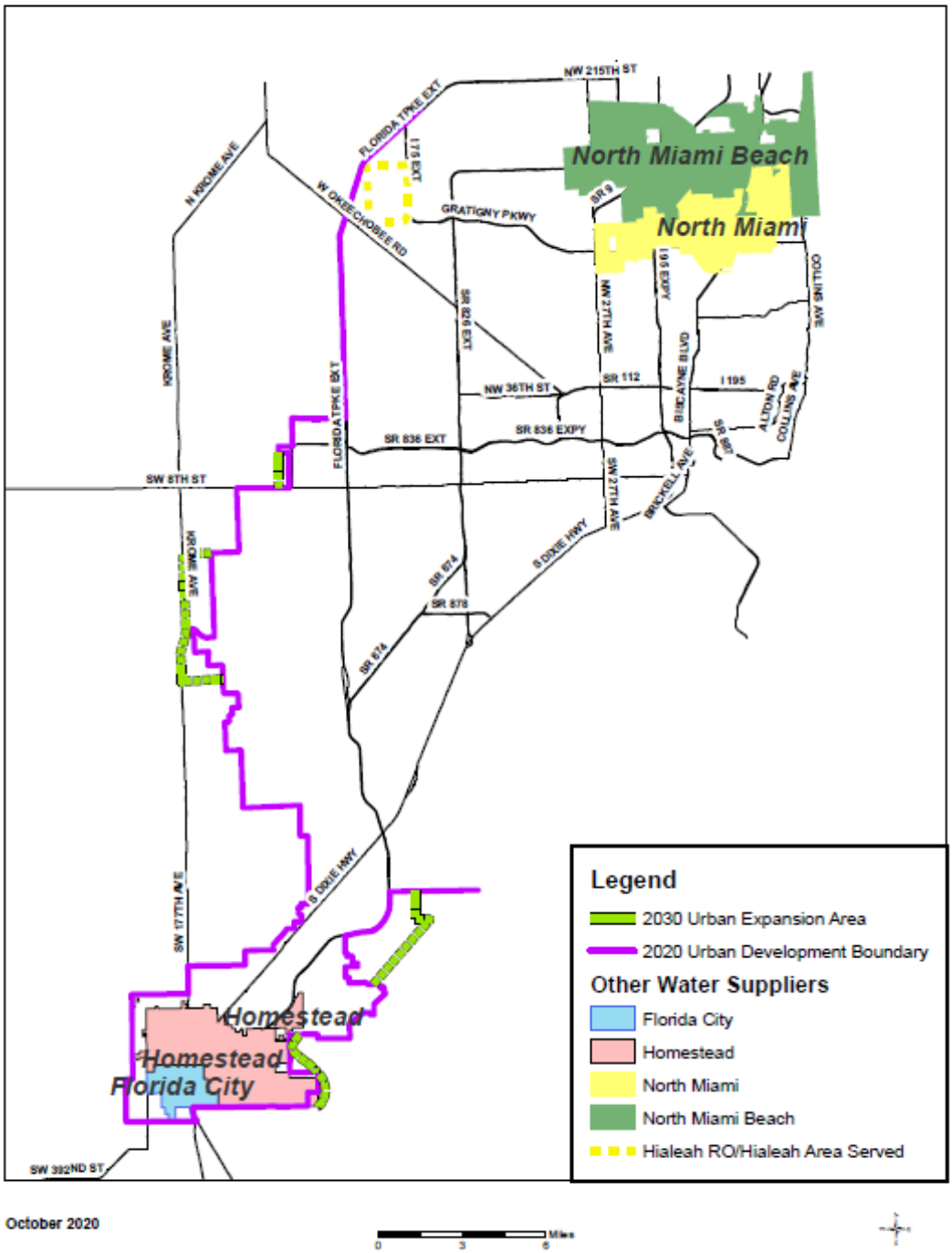
2.3.2 City of North Miami Beach

The City of North Miami Beach provides water service to parts of northern Miami-Dade County within its municipal boundaries, as well as outside of its municipal boundaries extending into the northeastern and northwestern portions of unincorporated Miami-Dade County. The City of North Miami Beach provides water service within its municipal boundaries, and to portions of the City of Aventura, Town of Golden Beach, portions of the City of Miami Gardens, City of Sunny Isles

Beach, and portions of unincorporated Miami-Dade County. The City of North Miami Beach has emergency interconnections with Bal Harbor Village, City of Hallandale Beach, and City of North Miami.

The City's distribution system consists of a high-pressure system, distributing potable water service to more than 174,000 people in northeast Miami-Dade County. The service area is generally bounded by the Snake Creek Canal and Ives Dairy Road to the north, NW 37th Avenue to the west, NE and NW 135th Street to the south, and Collins Avenue to the east. Only about 25 percent of the City's service area is within City limits.

Figure 2-8: Other Water Suppliers in Miami-Dade County



2.3.3 City of Homestead

The City of Homestead provides water within most of its municipal boundaries and to a small part of southern Miami-Dade County including a portion of Florida City and parts of unincorporated Miami-Dade County. The City of Homestead sells water to WASD to serve a housing development consisting of 107 homes within Unincorporated Miami-Dade County. This development, named Redavo, has an estimated population of 310 individuals. The City of Homestead and Miami-Dade County have an active water use agreement.

Pursuant to the terms of a Consent Decree between the City of Homestead and the SFWMD, dated December 7, 2009, the City is required to reduce its withdrawal from the Biscayne Aquifer by approximately 3 MGD to meet the conditions of the City's Water Use Permit. On July 9, 2010, the City of Homestead entered into a 20-year water wholesale agreement with WASD to purchase up to 3 MGD of water to meet the demands of its retail customers.

It should be noted that WASD provides water service within portions of the municipal boundary of the City of Homestead. Furthermore, the City of Homestead sells water to Florida City to service a small portion of Florida City's service area on the southeast corner of U.S. 1 and S.W. 328th Street.

The City of Homestead's service area consists of a high-pressure water distribution system that services approximately 10,240 acres in southern Miami-Dade County, with an estimated population of 76,000. The service area is generally bounded by SW 296th Street to the North, SW 137th Avenue to the east, SW 344th Street to the south, and SW 192nd Avenue to the west.

2.3.4 City of Hialeah

The City of Hialeah provides water service to portions of Northwest Miami-Dade County within its municipal boundaries. The City produces potable water via the Hialeah Reverse Osmosis (RO) Water Treatment Plant. On December 27, 2007, the Miami-Dade County and the City of Hialeah entered into a Joint Participation Agreement (JPA) to design, construct, and operate the Hialeah RO Water Treatment Plant. The JPA specified that the County and the City would be equal partners in funding the project. The facility initiated operation in November of 2013.

The water treatment facility has a current production capacity of 7.5 MGD, allocated equally to the City of Hialeah and Maim-Dade County (3.25 MGD each). The portion of the City of Hialeah served by the Hialeah RO water treatment plant consists of approximately 1,900 acres and is located between NW 170th Street on the north, NW 138th Street on the South, I-75 on the east, and NW 107th Avenue on the west.

2.3.5 Florida City

Florida City provides water service to parts of southern Miami-Dade County within its municipal boundaries and to a small portion of unincorporated Miami-Dade County. The City's service area is comprised of a high-pressure distribution system that services approximately 1,520 acres in southern Miami-Dade County. The service area has an approximate population of 13,000 and is generally bounded by SW 328th Street to the north, SW 172nd Avenue/SW 167th Avenue to the east, SW 352nd Street/SW 360th Street to the south, and SW 187th Avenue to the west.

2.3.6 Florida Keys Aqueduct Authority

The Florida Keys Aqueduct Authority (FKAA) has facilities in southern Miami-Dade which serve residents in Monroe County. The FKAA does not provide service within Miami- Dade County, despite some of their water supply, treatment, and transmission facilities being located within Miami-Dade County. These facilities include supply wells, a treatment facility and a transmission main to Monroe County.

2.3.7 Large and Small Public Water Supply Systems

Additional public water supply systems exist within Miami-Dade County. Miami-Dade County has conducted a preliminary survey of these public water systems. A list of these public water supply systems provided by the Florida Department of Health is contained in Appendix G.

Section 3

Existing Water Supply Facilities

3.1 Water Supply Wellfields (Sources of Water)

The Miami-Dade Water and Sewer Department's (WASD) water system is served by the Hialeah-Preston Water Treatment Plant (WTP), Alexander-Orr WTP, the Hialeah Reverse Osmosis (RO) WTP, and five (5) small treatment plants in the southern portion of Miami-Dade County. The existing water supplies serving these treatment plants originate from two major aquifer systems in Miami-Dade County: The Surficial and Floridan Aquifer Systems. The Surficial Aquifer System, also known as the Biscayne Aquifer, is the major source of drinking water and occurs at or near the land surface in most of the County and is the principal water-bearing unit of the Surficial Aquifer System in the region (Causaras, 1987). Groundwater from the Floridan Aquifer (FA) is the drinking water source for the Hialeah RO WTP.

The 20-Year Water Use Permit (WUP) for Miami-Dade County was approved by the South Florida Water Management District (SFWMD) Governing Board on November 15, 2007. Subsequent modifications have been submitted by WASD and approved by SFWMD, with the latest having been dated March 8, 2022. The water use permit limits WASD's annual allocation to 148,018 million gallons (MG) and the maximum monthly allocation to 12,951.61 million gallons through 2042. These allocations are further limited by the wellfield operational plan described in Exhibit 8 of the WUP. A copy of the approved water use permit and limiting conditions is presented in Appendix A.

3.1.1 Relevant Regional Issues

The SFWMD Lower East Coast Water Supply Plan (2018) identified several regional water supply issues including the limited availability of fresh surface and groundwater which further withdrawals could have impacts on the regional system, wetlands, pollution, existing legal users (ELU) and saltwater intrusion. In addition, Resource Allocation Areas (RAA) rules and Minimum Flows and Levels (MFLS) further are needed to be assessed with regards to allocations for the Lower East Coast Everglades Waterbodies, which includes Miami-Dade County. Miami-Dade WASD has worked with SFWMD permitting staff to address these issues in the WASD Water Use Permit Modification, issued on March 8, 2022. WASD has completed extensive modeling using the peer reviewed U.S. Geological Survey model integrated surface/groundwater numerical flow model (USGS, 2014). In conjunction with the USGS model, WASD has developed an optimization decision tool (ODT) model that is designed to minimize impact to regional water supply issues listed above. WASD has entered into an agreement with Palm Beach Aggregates, Inc. in July 2020 for 15 mgd of water allocation from the C-51 reservoir project. WASD worked with SFWMD staff to incorporate the C-51 allocation into the base Biscayne Aquifer allocation. Modeling

results reviewed with SFWMD staff indicate the Biscayne Aquifer allocation with supplemental C51 deliveries will not impact regional flows, wetlands, and ELU, and will benefit the regional system. Modeling also indicates there will be no impact that would alter the rate or direction of movement of potential pollutant concentrations. Modeling results indicate the allocation will not have a notable effect on the position of the freshwater-seawater interface in Miami-Dade County. Miami-Dade County personnel including staff from WASD are on the Biscayne Bay and Southeastern Everglades Ecosystem Restoration (BBSEER), which includes the CERP component of Biscayne Bay Coastal Wetlands Phase II project, and will assess water supply along with other environmental issues as part of the Project Development Team (PDT) of BBSEER.

Miami-Dade WASD in agreement with the City of Hialeah maintains the Hialeah Reverse Osmosis Facility that will provide 10 mgd of finished brackish Floridan Aquifer water. WASD continues to monitor the water quality and production rates of the facility with the City of Hialeah to optimize wellfield management to minimize drawdowns and prevent undesirable water quality changes. The South Miami Heights (SMH) Floridan Aquifer Reverse Osmosis Facility is included in the March 8, 2022 WUP as the alternative backup water supply for the C-51 reservoir and unforeseen future water demands should it be needed.

Miami-Dade WASD is in the process of rehabilitating its existing 25 mgd Aquifer Storage and Recovery (ASR) facilities at the West and Southwest wellfields. Once rehabilitation is complete, cycle testing will commence under the supervision of the Florida Department of Environmental Protection (FDEP) Underground Injection Control permits already obtained from FDEP. Once cycle testing has demonstrated their feasibility and recovery rates, the ASR systems will be integrated into WASD operations to store wet season flows that can be used then for future water supply in dry conditions.

The State of Florida Ocean Outfall requirements do not affect Miami-Dade WASD's water supply plan. WASD does not intend to develop wastewater reuse into its water supply plan at this time due to the extreme costs rendering reuse infeasible in Miami-Dade County.

3.1.2 Wellfields and Capacities

The existing WASD water supply system is comprised of eight (8) major Biscayne Aquifer wellfields in the Hialeah-Preston and Alexander Orr, Jr. subareas, twelve (12) Biscayne Aquifer water supply wells located at five individual water systems (formerly Rex Utility District water system) in South Miami-Dade County and ASR wells at the Alexander Orr, Jr. Subarea, as shown in **Table 3-1, Table 3-2** and **Figure 3-1**.

A new wellfield is planned in the Central Dade area with three (3) Biscayne Aquifer wells, and the South Miami Heights wellfield with eight (8) Floridan Aquifer wells is proposed as backup in the event the C-51 reservoir does not become operational. Each of the wellfields are described below.

3.1.3 Hialeah-Preston Subarea Wellfields

The Hialeah-Preston WTPs are supplied by four water supply wellfields, shown on **Figure 3-1**. The total designed installed capacity from the four wellfields in the Hialeah-Preston subarea is approximately 295 million gallons per day (MGD). Appendix A provides detailed information about well construction and capacities of the Hialeah-Preston area wellfields.

The new Hialeah RO WTP is supplied by six (6) FA wells, as noted on **Figure 3-2.** The total installed capacity for the six wells is 12 MGD. A total of four (4) additional FA wells with a total capacity of 8 MGD are anticipated to be placed into service by December 31, 2020.

In addition to these wellfields, four abandoned wells at a Medley Wellfield with a design capacity of 48.96 MGD have been rehabilitated and are available on a stand-by basis in the event of an emergency.

Table 3-1 Biscayne Aquifer Wellfield Data

Wellfield	Wellfield	
	Installed Design Capacity (MGD)	Number of Wells
Hialeah-Preston		
Hialeah	12.54	3
John E. Preston	53.28	7
Miami Springs	79.30	20
Northwest[(a)]	149.35	15
Subtotal	**294.47**	**45**
Medley Wellfield (emergency only) [(b)]	**48.96**	**4**
Alexander Orr		
Alexander Orr	74.40	10
Snapper Creek	40.00	4
Southwest	161.20	17
West	32.40	3
Subtotal	**308.00**	**34**
Existing South Dade		
Elevated Tank	4.32	2
Everglades Labor Camp	5.04	3
Leisure City	4.18	4
Naranja	1.15	1
Newton	4.32	2
Subtotal	**19.01**	**12**
New Wellfield		
Cluster 10 - Proposed new wellfield in Central Dade	*15.00*	*3*
WASD System Total (Biscayne Aquifer)	**670.44**	**95**

Source: WASD Water Use Permit No. 13-00017-W, Exhibit 8 and Exhibit 3, Re-issue March 8, 2022

(a) Northwest wellfield design capacity with pumps at high speed; 110 mgd when pumps operate at low speed.
(b) Wells in this wellfield had been abandoned. They have been restored with the purpose of using them only during an emergency.

Table 3-2 Floridan Aquifer Wellfield Data

Wellfield	Wellfield	
	Design Capacity (MGD)	**Number of Wells**
Alexander Orr WTP (use of FA Wells for ASR)		
Southwest	10.00	2
West	15.00	3
Subtotal	25.00	**5**
Hialeah RO WTP (use of FA Wells for RO)		
Hialeah RO, Phase 1-a [(a)]	12.00	6
Future Hialeah RO, Phase 1-b[(b)]	*8.00*	*4*
South Miami Heights WTP (Back-up Alternative to C-51 Reservoir: FA Wells for RO)		
Back-up Future South Miami Heights	*23.27*	*8*
Existing WASD System Total (Floridan Aquifer)	**37.00**	**11**
Future WASD System Total (Floridan Aquifer)	**68.27**	**23**

Source: WASD Water Use Permit No. 13-00017-W, Exhibit 7 and Exhibit 9, Re-issue March 8, 2022

(a) Phase 1-a, 10 MGD Hialeah RO WTP with initial 6 Floridan aquifer wells.
(b) Phase 1-b, 10 MGD Hialeah RO WTP with additional 4 Floridan aquifer wells. Wells constructed to be active by 12/31/2022.

Figure 3-1: WASD Wellfields, Wellfield Protection Areas

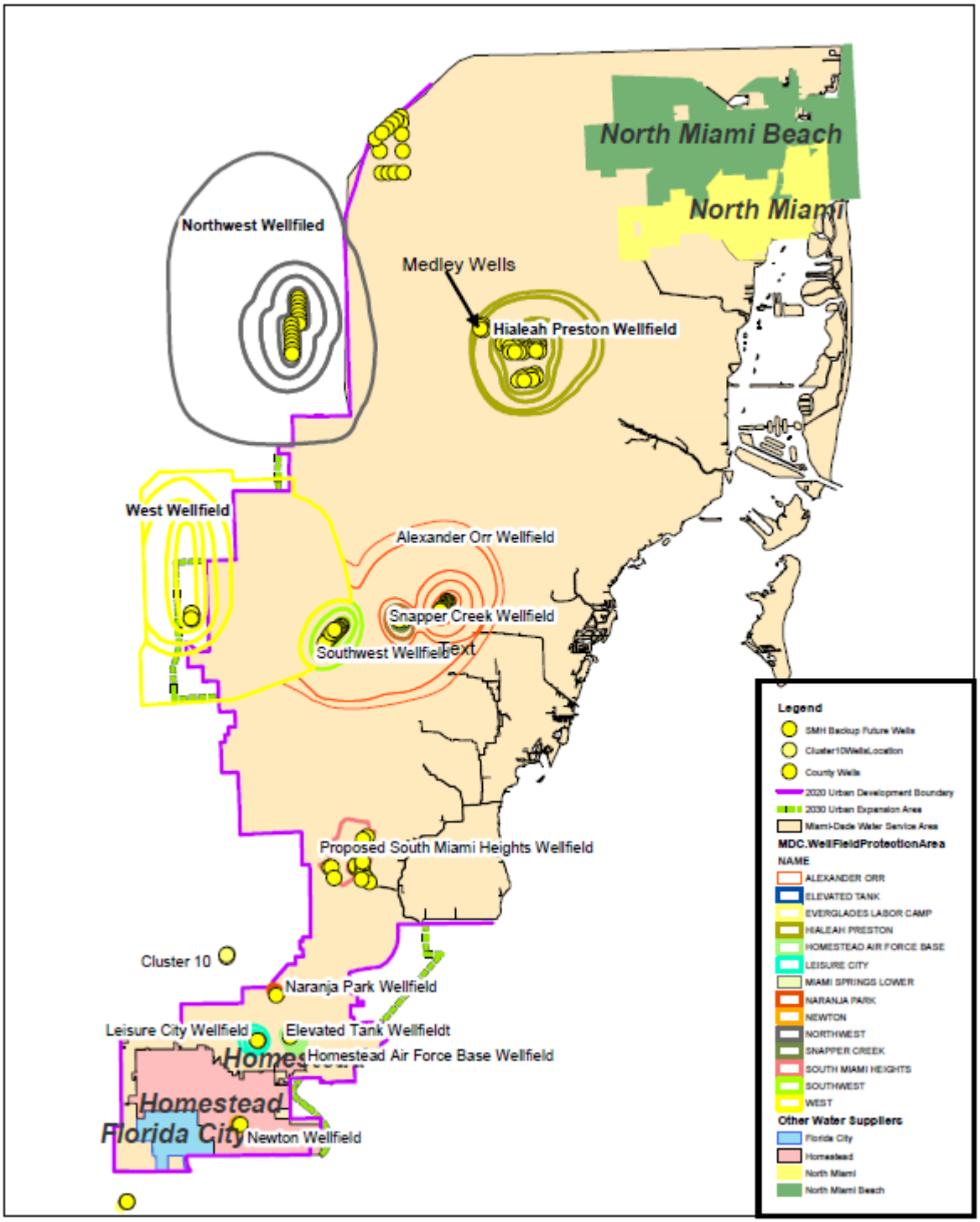
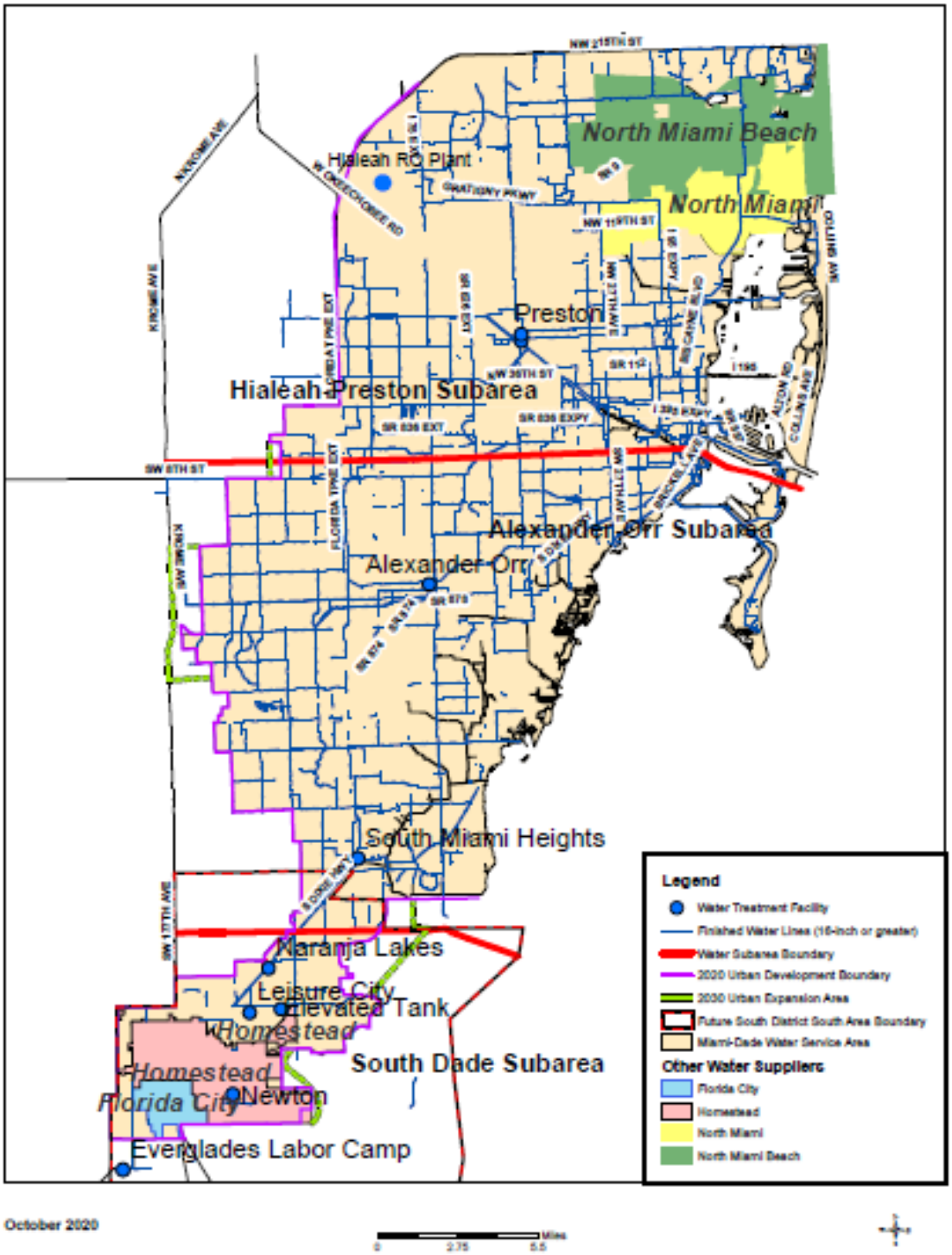


Figure 3-2: WASD Water Treatment Plants and Finished Water Lines



3.1.3.1 Hialeah Wellfield

The three active wells located in the Hialeah Wellfield were 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).

3.1.3.2 John E. Preston Wellfield

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.

3.1.3.3 Miami-Springs Wellfield

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 Miami Springs wellfield is currently undergoing a multi-phase project to rehabilitate the water wells, wellhouses and pumps, and the electrical system.

3.1.3.4 Northwest Wellfield

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 10 have a low speed capacity of 9.35 MGD. The total nominal capacity for the wells at the high-speed flow is 220.94 MGD.

3.1.3.5 Medley Wellfield

The Medley Wellfield had previously been abandoned. However, four wells were recently rehabilitated for emergency use only. The wells are 42 inches and 48 inches in diameter and 100 to 115 feet-deep, with casing depths ranging from 42 to 48 feet. The total **wellfield** capacity is 48.96 MGD or 34,000 gpm.

3.1.3.6 Hialeah RO Wellfield

The Hialeah RO wellfield has six (6) active wells that were constructed in 2012. The wells are 16 and 17-inches in diameter, with depth ranging from 1,452 to 1,490 and casing depths ranging from 1,060 to 1,080 feet. The capacity of each well is 2 MGD. The total capacity of the wellfield is 12 MGD. An additional four wells with a capacity of 2 MGD each have been installed and are anticipated to be active by December 31, 2022.

3.1.4 Alexander Orr, Jr. Subarea Wellfields

The Alexander Orr, Jr. WTP is supplied by four water supply wellfields as shown on Figure 3-1. The total designed installed capacity from the four wellfields in the Alexander Orr, Jr. service area is approximately 308 MGD. There are Floridan aquifer wells at two of the wellfields. Appendix A provides detailed information about well construction and capacities, of the Alexander Orr, Jr. area wellfields.

3.1.4.1 Alexander Orr, Jr. Wellfield

The ten active wells located in the Alexander Orr, Jr. Wellfield were constructed between 1949 and 1964. These wells are 16 inches and 42 inches in diameter, 100-feet deep and have casing depths ranging from 40 to 50 feet. The capacity of the wellfield is 74.4 MGD (ranging between 4,170 and 7,500 gpm for each well).

3.1.4.2 Snapper Creek Wellfield

The four active wells located in the Snapper Creek Wellfield were constructed in 1976. These wells are 24 inches in diameter, 108 feet deep and have casing depths of 50 feet. The total wellfield capacity is 40.0 MGD or 27,760 gpm (6,940 gpm for each well).

3.1.4.3 Southwest Wellfield

The seventeen (17) active wells located in the Southwest Wellfield were constructed between 1953 and 1997. These wells are 20 inches to 48 inches in diameter, 88 to 104 feet-deep and have casing depths ranging from 33 to 54 feet. The total wellfield capacity is 161.20 MGD (ranging between or 4,900 and 7,500 gpm for each well).

3.1.4.4 West Wellfield

The West Wellfield has three wells that were constructed in 1994. The wells are 24 inches in diameter and 70 feet-deep, with casing depths of 40 feet. The total wellfield capacity is 32.4 MGD or 7,500 gpm per well. This wellfield is limited by the SFWMD to 15 MGD on either an average or maximum daily basis. Well No. 29 pumpage islimited to 5 MGD; Well No. 30 is limited to 10 MGD; and Well No. 31 is to be used as a standby well only to be used with prior written approval from the SFWMD.

3.1.4.5 Floridan Aquifer ASR

Three Upper Floridan Aquifer wells are located in the West Wellfield (WWF) and two are located in the Southwest Wellfield (SWWF). These wells were constructed in 1996 and 1997 and are 30 inches in diameter. The total depth of these wells is between 1,200 feet and 1,300 feet with casing depths between 835 feet and 850 feet. The total capacity of the West Wellfield wells is 15 MGD or 3,500 gpm per well. The total capacity of the Southwest Wellfield wells is 10.08 MGD or 3,500 gpm per well.

Miami-Dade WASD is cycle testing the ASR wells at the SWWF and WWF. WASD anticipates using these wells for storage of fresh Biscayne Aquifer water in the Floridan Aquifer during the wet season for extraction and use in the dry season. WASD operates the ASR system according to Department of Environmental Protection UIC permits. Injected water from the Biscayne Aquifer is from the Biscayne Aquifer water

allocation in the 20-year Water Use Permit 13-00017-W for the WWF and the SWWF.

3.1.4.6 Cluster 10 Wellfield

The three (3) proposed wells, as shown on Figure 3-1, located on Miami-Dade Property will be constructed to optimize withdrawal from the Biscayne Aquifer. These wells will be spaced apart by an average 500 feet with a total wellfield capacity of 15 MGD (ranging between or 3,400 and 3,600 gpm for each well).

3.1.5 South Dade Wellfields

The five (5) South Dade WTPs are supplied by five individual water supply wellfields as shown on Figure 3-1. The total designed installed capacity from the five wellfields for the South Dade area is 19.01 MGD. Appendix A provides detailed information about well construction and capacities, of the existing South Dade area wellfields.

3.1.5.1 Elevated Tank Wellfield

The two (2) active wells located in the Elevated Tank Wellfield were constructed in 1982 and 1996. These wells are 12 inches and 16 inches in diameter, 45 to 50 feet deep and have casing depths of 35 and 40 feet. The wellfield's capacity totals 4.32 MGD or 1,500 gpm for each well.

3.1.5.2 Everglades Wellfield

The three (3) active wells located in the Everglades Wellfield were constructed from 2000 to 2001. These wells are 18 inches in diameter, between 50 and 55 feet deep and have casing depths of 40 and 45 feet. The wellfield's capacity totals 5.04 MGD, ranging between or 700 and 1,500 gpm for each well, excluding the three abandoned wells.

3.1.5.3 Leisure City Wellfield

The four (4) active wells located in the Leisure City Wellfield were constructed between 1953 and 1971. These wells are 6 inches and 12 inches in diameter, approximately 30 to 40 feet deep and have casing depths ranging from 25 to 35 feet. The wellfield's capacity totals 4.18 MGD, ranging between or 450 and 1,500 gpm for each well.

3.1.5.4 Naranja Wellfield

The only active well located in the Naranja Wellfield was constructed in 1975. This well is 12 inches in diameter, 40 feet deep and has a casing depth of 35 feet. The wellfield's capacity totals 1.15 MGD or 800 gpm.

3.1.5.5 Newton Wellfield

The two (2) active wells located in the Newton Wellfield were constructed in 2000 and 2001. These wells are 18 inches in diameter, approximately 65 feet deep and have casing depths ranging from 50 to 53 feet. The wellfield's capacity totals 4.32 MGD or 1,500 gpm for each well, excluding two abandoned wells.

3.1.5.6 Future South Miami Heights Wellfield

The future South Miami Heights WTP remains on the Water Use Permit as the backup alternative water supply in the event the C-51 reservoir does not become operational. The future South Miami Heights wellfield includes a total of eight (8) upper Floridan Aquifer production wells as shown on Figure 3-1. The future SMH WTP is planned to have a production capacity of 17.45 MGD finish water from the Floridan Aquifer.

3.1.6 Other Water Supply Wellfields

3.1.6.1 City of North Miami

The City of North Miami Winson Water Treatment Plant (WTP) is currently supplied exclusively from the Biscayne Aquifer. There are presently eight (8) 12-inch diameter wells, ranging in depths from 56 to 124 feet. They were drilled and put into service in 1962. Two wells are located at the WTP site, and another three pairs are located at three different public parks in the vicinity of the WTP. These wellfields provide water supply to a portion of unincorporated Miami-Dade County in addition to within the City of North Miami municipal boundary.

3.1.6.2 City of North Miami Beach

The City of North Miami Beach Norwood Water Treatment Plant is supplied by sixteen (16) Biscayne aquifer and four (4) Floridan aquifer wells. These wellfields provide water supply to a portion of unincorporated and incorporated Miami-Dade County in addition to areas within the City of North Miami Beach municipal boundary.

3.1.6.3 City of Homestead

The City of Homestead is currently supplied by six Biscayne Aquifer withdrawal wells, with a current capacity of 15.22 MGD. There are two 16-inch, two 18-inch, and two 20-inch diameter wells, all 60 feet in depth. The Wittkop Park wellfield, in the northwest part of the service area, has 4 wells, and the Harris wellfield, located just east of Federal Highway, US-1, has two wells. These wellfields provide water supply to a portion of unincorporated Miami-Dade County in addition to area within the City of Homestead municipal boundary.

3.1.6.4 Florida City

The City of Florida City water treatment plant is supplied by four (4) production wells located on a site adjacent to the treatment plant. There are two (2) 12-inch and two (2) 10-inch diameter wells. All four wells withdraw water from the Biscayne Aquifer.

3.2 Water Treatment/Storage Facilities

The WASD water system consists of three large treatment plants, the Hialeah RO plant and the smaller treatment plants in the extremely southern portion of Miami-Dade County, as shown on **Figure 3-2**.

3.2.1 Hialeah-Preston Water Treatment Plants (WTPs)

The Hialeah and John E. Preston WTPs are located at 200 W. 2nd Avenue and 1100 W. 2nd Avenue, respectively. The adjacent facilities in Hialeah share interconnected source water and finished water storage capacity. These two plants serve the Hialeah-Preston subarea, generally the service area that lies north of Flagler Street. The two plants have similar treatment processes, which are described separately below.

3.2.1.1 Hialeah Water Treatment Plant

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. There are plans to rerate and upgrade the Hialeah WTP to a capacity of 70 MGD, if necessary.

The source water for Hialeah WTP is from the Hialeah-Miami Springs Wellfields, supplemented by the Northwest Wellfield. The Hialeah WTP has a current rated capacity of 60 MGD. The treatment process 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.

3.2.1.2 John E. Preston Water Treatment Plant

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, the 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 cited in a residential area of Hialeah.

3.2.1.3 Hialeah Reverse Osmosis (RO) Water Treatment Plant

On December 27, 2007, the Miami-Dade County and the City of Hialeah entered into a Joint Participation Agreement (JPA) to design, construct, and operate a water treatment plant. The JPA specified that the County and the City would be equal partners in funding the project.

The Hialeah RO WTP was released for operation by the Florida Department of Health in November 2013. The Plant is located at 4250 W. 114th Terrace in the City of Hialeah and is approved to operate at a capacity of 7.5 MGD. An additional capacity of 2.5 MGD is scheduled to be completed by December 31, 2022. The main source of water

for the Hialeah RO WTP is the Floridan Aquifer. The Hialeah RO plant is currently in operation serving 50% of its water capacity to the City of Hialeah and 50% to unincorporated areas within the WASD's service area.

3.2.2 Alexander Orr, Jr. Water Treatment Plant

The Alexander Orr, Jr. WTP is located at 6800 S.W. 87th Avenue in Miami. The original design capacity was 40 MGD in 1954. This plant has undergone several expansions during the past 50 years. The raw water pumping capacity was increased by 32 MGD to 262 MGD in 1995 with an additional source from the West Wellfield. Additional reservoir and high-pressure service capacities were also added to bring the total plant design capacity to 256 MGD. The plant rated capacity is 214.74 MGD.

The Alexander Orr, Jr. WTP receives its source water from the Alexander Orr, Jr. Wellfield, Snapper Creek Wellfield, Southwest Wellfield, and the West Wellfield. The Alexander Orr, Jr. WTP treatment process is similar to the other two major plants utilizing lime softening with activated sodium silicate added prior to lime as a coagulant aid, recarbonation, fluoridation, chlorination, ammoniation, and filtration. Unlike the Hialeah and Preston WTPs, this plant does not utilize enhanced softening or air stripping towers. The Alexander Orr, Jr. WTP can also receive groundwater from five Upper Floridan Aquifer wells located in the West Wellfield and the Southwest Wellfield. Finished water is distributed to a service area generally delineated as south of Flagler Street.

3.2.3 South Dade Water Treatment Plants

In 1985, WASD purchased an existing private utility known as the Rex Utility District Water System. Today, this system is referred to as the South Dade Water System. At the time of purchase, the system consisted of six plants and associated wellfields. Since the time of purchase, the Redavo WTP has been taken out of service.

The South Dade Water System is currently made up of five small WTPs that draw groundwater from the 12 wells located at the plant sites. The five small plants serving the South Dade Service Area include Elevated Tank, Everglades Labor Camp, Leisure City, Naranja, and Newton WTPs. These plants are located in the Southern portion of the County as shown on Figure 3-2. The plants utilize in-line disinfection with free chlorine and stabilization with the addition of polyphosphate. The 2019 annual average daily flow (ADF) for the plants was 7.00 MGD. This system serves a population of approximately 43,207 in the Leisure City, Everglades Labor Camp, and Naranja areas excluding the cities of Homestead and Florida City, which provide their own water service. These small treatment plant capacities are limited by the pumping capabilities at each plant.

3.2.4 Other Water Treatment Plants

3.2.4.1 City of North Miami

The City of North Miami Norman H. Winson Water Treatment Plant is located at Sunkist Grove, 12098 NW 11th Avenue, and was commissioned in 1962. The Winsom WTP utilizes lime-softening and is capable of supplying 9.3 MGD of water to consumers. About 8.50 MGD is presently treated and distributed from the City's

WTP which represents approximately 65% of the City's demand. The City purchases approximately 35% of its total water needs from WASD. The Winson WTP provides treated water to a portion of unincorporated Miami-Dade County in addition to areas within the City of North Miami municipal boundary and the Village of Biscayne Park.

3.2.4.2 City of North Miami Beach

The City of North Miami Beach supplies water through the City owned and operated Norwood-Oeffler Water Treatment Plant, located on the northeast corner of NW 191st Street and NW 9th Avenue. The Norwood-Oeffler Water Treatment plant, originally constructed in 1953, is a lime-softening water treatment facility. The plant was upgraded in 2007 to include membrane treatment of raw water from the Biscayne and Floridan Aquifers. The treatment now consists of blending of lime softening and nanofiltration of Biscayne Aquifer water with reverse osmosis for the Floridan Aquifer water. The treated water is stored in two above-ground storage tanks at the Norwood-Oeffler WTP prior to being pumped into the City's water transmission and distribution system. The Water Treatment Plant is currently permitted by the South Florida Water Management District (SFWMD) to withdraw 26.31 MGD of raw water from the Biscayne Aquifer and 12.07 MGD from the Floridan Aquifer. The treatment plant has an approved capacity of 32 MGD. The WTP provides treated water to a portion of unincorporated Miami-Dade County, Golden Beach, Sunny Isles, City of North Miami Beach municipal boundary, and portions of Aventura and Miami Gardens.

3.2.4.3 City of Homestead

The City is supplied by two water treatment plants. The Wittkop Park plant is located at 505 NW 9th Street and is supplied by four Biscayne Aquifer wells with a capacity of 11.2 MGD. The Harris Field water treatment plant is located at 1084 NE 8th Street. This plant is supplied by two Biscayne Aquifer wells and has a capacity of 5.7 MGD. Both water treatment facilities use chlorination for disinfection and have a combined capacity of 16.92 MGD. The Wittkop Park and Harris Field WTPs provide treated water to a portion of unincorporated Miami-Dade County in addition to areas within the City of Homestead municipal boundary.

3.2.4.4 Florida City

The city of Florida City supplies water through a chlorination water treatment facility, with a capacity of 4 MGD. The water treatment plant is located at 461 NW 6 Avenue, adjacent to the City's Loren Roberts Park.

3.2.5 Finished Water Storage

3.2.5.1 Hialeah Preston Subarea

The finished water storage facilities for the Hialeah-Preston subarea consist of both "in-plant" and remote storage facilities. The storage facilities are summarized in **Table 3-3**.

Table 3-3 Hialeah-Preston/Hialeah R.O. Finished Water Storage Facilities

Location	Description	Capacity (MG)
Hialeah WTP	Reservoir – Ground Storage	3.0
Hialeah WTP	Clearwell	1.7
John E. Preston WTP	Ground Storage Tank No. 1	9.0
John E. Preston WTP	Ground Storage Tank No. 2	14.0
John E. Preston WTP	Clearwell	1.1
N.W. 20th Street	Ground Storage Tank	7.5
N.W. 36th Street	Ground Storage Tank	5.0
N.W. 67th Street	Ground Storage Tank	8.2
N.W. 30th Street	Ground Storage Tank	2.5
Carol City	Ground Storage Tank	2.0
Hialeah R.O. WTP	Ground Storage Tank	10.0
Total Storage		**64.0**

Source: WASD Water Facilities Master Plan, 2003 and WASD

3.2.5.2 Alexander Orr, Jr. Subarea

The water storage facilities of the Alexander Orr, Jr. subarea consist of a 59-MG ground storage tank located and a 1.6-MG plant clear well located at the WTP, and a 5-MG ground storage tank at South Miami Heights for a total of 65.6-MG storage.

3.2.5.3 South Dade subarea

The South Dade subarea has storage at individual water treatment plants for disinfection purposes. Additionally, WASD currently has a five (5) MG finished water reservoir and high service pumping facility in operation at its South Miami Heights site (since 2013). This storage tank is used to augment Alexander Orr Jr. WTP storage of finished water for high-demand periods. The various interconnections at several locations between the South Miami-Dade Water System and the Alexander Orr subarea, ensures adequate storage and reliability of service to the South Miami-Dade Water System.

3.2.5.4 Other Water Suppliers

The City of North Miami has two storage tanks that hold treated water prior to being pumped into the distribution system. The total combined storage capacity of the two tanks is 2.25 million gallons, or 17 percent of the current average daily demand. These storage tanks provide storage of treated water to service a portion of unincorporated Miami-Dade County in addition to areas within the City of North Miami municipal boundary.

The City of North Miami Beach stores the treated water in two above-ground storage tanks at the Norwood-Oeffler WTP prior to being pumped into the City's water transmission and distribution system. The storage capacities of the tanks are 4.2 and 2.0 million gallons. The City also uses a 2-million-gallon remote tank bringing the total storage capacity in the City's water-supply system to 8.2 million gallons. These

storage tanks provide storage of treated water to service a portion of unincorporated Miami-Dade County in addition to areas within the City of North Miami Beach municipal boundary.

The City of Homestead stores the finished water in three elevated storage tanks. After treatment, water from five of the six wells is stored in an elevated water storage tank at either Harris Field (0.5 MG), Wittkop Park (0.5 MG), or the Homestead Motorsports Complex (1.0 MG). Water from Well No. 5 at Harris Field is pumped directly into the system after treatment on an as-needed basis. The combined capacity of the storage tanks is 2 MG. These storage tanks provide storage of treated water to service a portion of unincorporated Miami-Dade County in addition to areas within the City of Homestead municipal boundary.

Florida City has one storage tank that holds treated water prior to distribution within its service area. The tank's storage capacity is 0.5 million gallons.

3.3 Water Distribution Facilities

The WASD water distribution system is currently supplied by three regional treatment plants, five (5) smaller treatment plants located in the southern portion of Miami-Dade County, and the Hialeah RO WTP. The distribution systems serving these treatment plants are comprised of loops and are interconnected, as shown on Figure 3-2.

3.3.1 Hialeah-Preston Subarea

Finished water from the Hialeah and John E. Preston WTPs is pumped through a system of dedicated low-pressure pipelines to remote storage tanks and pumping facilities. This system provides water service to the southeastern part of the Hialeah-Preston subarea. The low-pressure system initiates at the Hialeah WTP with a 42-inch diameter main heading due east along N.W. 62nd Street, and 36-inch and 42-inch diameter mains running southeast along Okeechobee Road then parallel to the Miami River. The main on N.W. 62nd Street connects to the N.W. 67th Street pumping station, which pumps the water to the south through a 30-inch diameter main running along N.W. 10th Ave. The 30-inch diameter main continues south and connects into the N.W. 36th Street pumping station. This main continues further south and connects into the golf ground pump station.

The 36-inch and 42-inch diameter mains combine into a 54-inch diameter main at N.W. 42nd Avenue. They split again into a 36-inch and a 42-inch diameter main at N.W. 32nd Avenue. These mains connect to the 30th Avenue pump station. The 30th Avenue pump station feeds two 36-inch diameter mains that connect to the 20th Street pumping station to complete the loop. The pipe loop is made predominantly of concrete and cast-iron pipes that were installed in the early 1930's. Some segments of this loop having been in service for more than 60 years. Replacement of these pipes are scheduled as needed in the WASD maintenance program.

The remaining part of this subarea is served by a high-pressure system. Water is pumped into the system by five high service in-plant pumps with a total capacity of

34.1 MGD at 167 feet total dynamic head (TDH). The high-pressure system delivers water service to Hialeah, Miami Springs, and a high-pressure main connected to the City of Miami. The northern section of the subarea is supplied by one major piping loop. The loop begins at the plant with a 72-inch diameter main heading north along West 2nd Avenue, next it turns west at West 20th Street, and then it turns North along West 4th Avenue to NW 191st Street. At this location, it turns east until it reaches N.E. 18th Avenue. It then turns south and connects into a 54-inch diameter main that connects to the N.W. 67th Street pumping station.

The southwestern portion of the subarea is supplied by a 36-inch diameter main that connects to the 54-inch diameter main heading out of the John E. Preston WTP at West 25th Street. The main heads west on N.W. 74th Street then turns south on N.W. 107th Avenue. It eventually interconnects with the Alexander Orr, Jr. subarea piping network on S.W. 56th Street around S.W. 117th Avenue.

3.3.1.1 City of Hialeah

Water Treatment Plant is comprised of an interconnected network of mains ranging from 8-inches to 36-inches in diameter, mostly of ductile iron pipe and C-900 PVC.

3.3.2 Alexander Orr, Jr. Subarea

The distribution system of the Alexander Orr, Jr. subarea is comprised of two major piping loops. The first major loop traverses the south and west portion of the subarea. The loop starts at the WTP with a 60-inch diameter main heading west on S.W. 64th Street and a 48-inch diameter main that runs south along S.W. 87th Avenue (Galloway Road) until S.W. 216th Street. The 48-inch diameter main then heads west along S.W. 216th Street to a tee connection at S.W. 127th Avenue. One branch of the tee runs north on S.W. 127th Avenue to S.W. 184th Street and then turns west to 137th Avenue. The 48-inch diameter main travels north on 137th Avenue to S.W. 152nd Street, where it connects into a 24-inch diameter main running east-west on 152nd Street and a 36-inch diameter main that continues north on 137th Avenue to S.W. 120th Street. There, the 36-inch diameter main turns west, then runs north along Hammocks Boulevard to S.W. 88th Street where it reduces to a 24-inch diameter main that runs north along S.W. 152nd Avenue to 72nd Street. The 24-inch diameter main then runs east-west on S.W. 72nd Street. At S.W. 147th Avenue, it connects with a 36- inch diameter main that runs north to S.W. 56th Street (Miller Road), where it connects with a 42-inch diameter main that runs east on Miller Road. This 42-inch diameter main enlarges to a 48-inch diameter main that eventually connects to the 60-inch diameter main at the intersection of Miller Road and S.W. 117th Avenue to complete the loop. A 36-inch diameter main branches off the 60-inch diameter main at the intersection of Miller Road and S.W. 117th Avenue. This 36-inch diameter main heads north along S.W. 117th Avenue and eventually interconnects the Alexander Orr, Jr. and the Hialeah-Preston subareas.

The second loop starts at the WTP with two 48-inch diameter mains. One main runs north on S.W. 87th Avenue (Galloway Avenue) to S.W. 40th Street (Bird Road) and then turns east. The main continues east along Bird Road, reduces to a 42-inch diameter main at N.W. 57th Avenue, then connects through a 30-inch diameter pipe connection with the second 48-inch diameter main at Bird Road and S.W. 37th Avenue

(Douglas Road). The second 48-inch diameter main travels along Highway 874 to S.W. 56th Street, where it turns east then northeast between S.W. 67th Avenue and S.W. 62nd Avenue to S.W. 48th Street. The main runs east on S.W. 48th Street then northeast through several changes in direction, where it connects to the other 48-inch diameter main at Bird Road and S.W. 37th Avenue. The main then travels north along South Dixie Highway and eventually interconnects with the Hialeah-Preston Service Area piping network through a 36-inch diameter pipe that runs along S.W. 2nd Avenue.

3.3.3 South Dade Subarea

The South Dade water distribution system consists of small water mains with diameters ranging from 16 inches to 4 inches. The distribution system is centered around each individual WTP. Each has its own sets of water main loops within the distinct service areas. The Leisure City, Elevated Tank, and Naranja WTPs, however, are so well interconnected that they can be generally considered as one distribution area. More than 63 percent of the South Dade subarea is served by these three plants. The distribution system of these three plants form one major loop that is bounded on the north by S.W. 248th Street, on the south by S.W. 304th Street, on the east by S.W. 117th Avenue, and on the west by S.W. 172nd Avenue.

The Everglades Labor Camp WTP serves a small area that is bounded on the north by S.W. 376th Street, on the south by S.W. 384th Street, on the east by S.W. 192nd Avenue, and on the west by S.W. 194th Path. This distribution system consists of one 12-inch-diameter loop around the service area interconnected with several 8-inch diameter distribution mains. The Everglades Labor Camp and the Newton WTP distribution system are interconnected via an 8-inch diameter main that runs east along S.W. 376th Street then heads north on S.W. 187th Avenue, where it connects with a 12-inch diameter main at S.W. 360th Street. The 8-inch diameter main continues north on S.W. 187th Avenue until S.W. 352nd Street, where it connects into a small distribution loop that terminates with a 16-inch diameter stub-out.

The Newton WTP distribution system consists of a single 12-inch diameter water main that runs east and west on S.W. 336th Street. The eastbound main then branches north and south along S.W. 152nd Avenue. The southbound branch then turns east on S.W. 344th Street and ultimately connects to the FP&L Turkey Point generating plant. The northbound branch continues along S.W. 152nd Avenue, where it connects to the Leisure City WTP distribution system at S.W. 304th Street. A 6-inch diameter main running south from SW 288th Street on S.W. 137th Avenue then east on S.W. 328th Street connects to an 8-inch diameter main that runs south on 117th Street. This 8-inch diameter main connects to the 12-inch diameter main to FP&L Turkey Point generating plant. This main ultimately completes the interconnection of the Newton WTP with the Leisure City, Elevated Tank, and Naranja WTPs' distribution areas.

The westbound branch of the 12-inch diameter main turns south on S.W. 162nd Avenue then heads south and west on Palm Drive. The main then continues south on S.W. 167th Avenue then west on S.W. 360th Street until it connects to the Everglades Labor Camp WTP 8-inch diameter main that runs north on SW 187th Avenue. The South Dade distribution system is interconnected with the Alexander Orr distribution system in the

vicinity of SW 127th Avenue.

3.3.4 Other Water Distribution Facilities

3.3.4.1 City of North Miami

The City of North Miami's distribution system consists of two 16-inch and one 12-inch diameter ductile iron pipes. The two 16-inch diameter pipes mostly service the areas east of the WTP. One of the 16-inch pipes eventually connects to a 20-inch pipe and then to two 12-inch pipes. The 20-inch and one of the two 12-inch pipes connects to a large 30-inch transmission main at various points. This 30-inch pipe serves as the main transmission line on the far-east side of the City. The other 16-inch main reduces to a 12-inch pipe. The 12-inch transmission main leaving the WTP travels west, then south, and expands into the distribution system. The City also maintains seven supply interconnections with WASD and emergency interconnections with the City of North Miami Beach and City of Opa-Locka. This distribution system provides treated water to service a portion of unincorporated Miami-Dade County in addition to within the City of North Miami municipal boundary.

3.3.4.2 City of North Miami Beach

The City of North Miami Beach distribution system provides treated water to service a portion of unincorporated Miami-Dade County in addition to within the City of North Miami Beach municipal boundary from the WTP.

The City has eleven high service pumps that deliver finished water to the distribution system at approximately 60 to 80 psi and have a combined capacity of 45 MGD with largest one pump out of service. The City's distribution system is fed by 18-inch, 24-inch, and 36-inch diameter transmission mains.

3.3.4.3 City of Homestead

The City's water distribution system is comprised of an interconnected network of mains ranging from 2-inches to 24-inches in diameter, mostly of ductile iron pipe. The water from the storage tanks flows into the mains, with a pressure of 45 to 60 psi.

On July 9, 2010, the City of Homestead entered into a 20-year water wholesale agreement with WASD to purchase up to 3 MGD of water to meet the demands of its retail customers. The interconnection between the City and WASD occurs at SW 137th Avenue and SW 288th Street.

3.3.4.4 City of Hialeah

The City's water distribution system within the service area of the Hialeah RO Water Treatment Plant is comprised of an interconnected network of mains ranging from 8-inches to 36-inches in diameter, mostly of ductile iron pipe and C-900 PVC.

3.3.4.4 Florida City

Florida City's water distribution system is comprised of an interconnected string of mains ranging from 2-inches to 16-inches in diameter, mostly of ductile iron pipe.

The City's distribution system provides service within its municipal boundaries.

3.4 Summary

As shown within this section, the WASD water supply and treatment systems have sufficient installed capacity to produce more potable water than is currently required. The supply capacity and treatment capacity are 697.44 MGD and 525.19 MGD respectively. **Table 3-4** summarizes this information. **Table 3-5** summarizes other suppliers' facilities capacities.

The capacities of these water supply and treatment systems have been coordinated with future demands and allocations. Sections 4 and 5 of this Work Plan address future demands and required water supply facilities.

Table 3-4 Capacity of WASD Wellfields and Water Treatment Facilitates

Facility	Design Capacity (MGD)
Hialeah-Preston Water Treatment Plants	60 + 165 = **225**
Hialeah-Preston Wellfields	**343.43**
Preston	53.28
Hialeah	12.54
Miami Springs	79.30
Northwest[(a)]	149.35
Medley Wellfield [(b)]	48.96
Hialeah RO Water Treatment Plant	**10**
Hialeah RO Wellfield (Floridan Aquifer)	**20**
Existing Hialeah RO	12.00
Future Hialeah RO (12/31/2022)	8.00
Alexander Orr Water Treatment Plant	**256**
Alexander Orr Well fields	**308**
Orr Plant	74.40
Snapper Creek	40.00
Southwest	161.20
West	32.40
South Dade Water Treatment Plants	**14.19**
South Dade Wellfields	**19.01**
Elevated Tank	4.32
Everglades Labor Camp	5.04
Leisure City	4.18
Naranja	1.15
Newton	4.32
Proposed Cluster 10 Wellfield	15.00
Back-up Future South Miami Heights (SMHs) Water Treatment Plant (Alternative to C-51 Reservoir)	**23.27**
Back-up Future South Miami Heights Wellfield	***23.27***
Existing WASD Wellfield Total	**682.44**
Existing WASD Water Treatment Plant Total	**505.19**
Future WASD Wellfield Total	**697.44 (without SMHs)**
Future WASD Water Treatment Plant Total	**525.19 (without SMHs)**

(a) Northwest wellfield design capacity with pumps at high speed; 110 mgd when pumps operate at low speed.

(b) Wells in this wellfield had been abandoned. They have been restored with the purpose of using them only during an emergency.
Source: WASD Water Use PermitNo. 13-00017-W, Exhibits 3, 7,8, and 9, , re-issue March 8, 2022 and Regulatory Economic Resources (RER) Plant Operating Permits.

Table 3-5 Other Suppliers' Facilities Capacities

Facility	Installed Capacity (MGD)
City of North Miami	
Norman H. Winson Water Treatment Plant	**9.30**
City of North Miami Wellfields (8 wells)	**14.96**
City of North Miami Beach	
Norwood-Oeffler Water Treatment Plant	**32.00**
City of North Miami Beach Wellfields	
Biscayne Aquifer Wellfields	27.90
Floridan Aquifer Wellfields	12.07
City of North Miami Beach Wellfields Total	**39.97**
City of Homestead	
Wittkop Park – Harris Field Water Treatment	11.2+5.7=**16.9**
City of Homestead Wellfields	
Wittkop Park	11.23
Harris Field	5.76
City of Homestead Wellfields Total	**16.99**
Florida City	
Florida City Water Treatment Plant	***4***
Florida City Wellfields (Total)	***4***

Source: City of North Miami Beach SFWMD Water Use Permit No. 13-00060-W re-issue on June 11, 2012, Water Supply Facilities Work Plan (City of North Miami, March 2008), Information provided via discussions with staff for the City of Homestead and Florida City.

Section 4
Population and Water Demand Projections

This section presents historical and projected population projections, as well as historical and finished water demand projections from Year 2020 through Year 2030 for Miami Dade Water and Sewer Department's (WASD) water service area. Population data were obtained from the Miami-Dade County Department of Regulatory and Economic Resources (RER), Planning Research and Economic Analysis Section, based on the 2010 Census and derived from the 2015 Transportation Analysis Zone (TAZ) population projections update. Since the 2007 Water Use Permit (WUP), WASD has requested several modifications to the permit to reflect new population data, revised water demand projections and alternative water supply projects to support the projected water demands. The most recent WUP modification was issued on March 8, 2022 with an expiration date of December 27, 2065. This update to the Water Supply Plan reflects updated demand projections based on most recent population data, and water supply projects within WASD's WUP.

4.1 Historical Population

Historical populations served by the WASD system are shown in **Table 4-1** in one-year increments from Year 2015 to Year 2019. The population in WASD's service area grew approximately 4.2% between Year 2015 and year 2019. Table 4-1 also provides a summary of historical population within Miami-Dade County. The WASD system served approximately 87% of the County total population in 2019.

Table 4-1 Historical Population Served by WASD

YEAR	TOTAL MDWASD	TOTAL COUNTY
2015	2,281,851	2,629,878
2016	2,306,905	2,659,364
2017	2,331,959	2,688,851
2018	2,357,013	2,718,337
2019	2,382,067	2,747,824

Source: Miami-Dade County RER, Research and Economic Analysis Section, 2010 Census, 2015 TAZ revised population data

4.2 Population Projections

Population projections for WASD's water service area in five-year increments from Year 2020 to 2030 are shown in **Table 4-2**. Overall, the population served by WASD is expected to increase approximately 9.51% from Year 2020 to Year 2030. The updated WASD population projections are approximately 4.8% lower than the projections in the 2018 Lower East Coast (LEC) Water Supply Plan Update.

Table 4-2 Population Projections to be Served by WASD

Year	Total WASD	Total* County
2020	2,407,121	2,777,310
2025	2,533,548	2,924,743
2030	2,659,975	3,072,175

Sources: * Miami-Dade County RER, Research and Economic Analysis Section, 2010 Census, 2015 TAZ revised population data.

4.3 Historical Water Use

Historic water use figures reflect water provided by the Hialeah-Preston, Hialeah Reverse Osmosis (RO), Alexander-Orr, Everglades, Leisure City, Newton, Elevated Tank, and Naranja WTPs and associated wellfields. These waters use figures provide the basis for forecasting future water demands for WASD's service area.

Table 4-3, provides the historical raw and finished water use for Year 2015 through Year 2019. Information shown in Table 4-3 includes per capital annual average and maximum month water use.

4.4 Water Demand Projections

The water demand projections presented herein are based on a system-wide finished water daily per capita use rate of 137.86 gallons per capita per day (gpcd). The per capita use was determined by taking a 3-year average from 2017 to 2019. Over more than a decade, Miami-Dade County's per capita water consumption and overall drinking water production have decreased significantly. The decline in WASD's per capita has been attributed to various drivers including deceleration of population growth, WASD's water conservation program, permanent year-round landscape irrigation restrictions, landscape ordinances requiring Florida Friendly landscaping, Florida Building Department Code changes requiring high efficiency fixtures and appliances for new construction, evolving trends in housing demographics (multifamily construction versus single family homes), and water use practices. These are further discussed in Section 4.5.1.1. Table 4-4, provides the projected finished water demands for Year 2020 through Year 2030.

4.4.1 Water Supply For Future Development

In 2011, WASD implemented a Water Supply Certification (WSC) Program to monitor the availability of water supply for future development, in accordance with the permitted withdrawal capacities in the County's Water Use permit, to address Policy WS-2C and CIE-5D in the County's Comprehensive Development Master Plan (CDMP) and Section 163.3180(2)(a) of the Florida Statutes. Before development, a Water Supply Certification is issued to ensure that adequate water supply is available by the time a

Certificate of Occupancy is issued for the proposed use. The development activities associated with comprehensive plan amendments within WASD's service area propose a redistribution of population and water demands that are contemplated and addressed in WASD's current Water Use Permit and are monitored through the WSC Program.

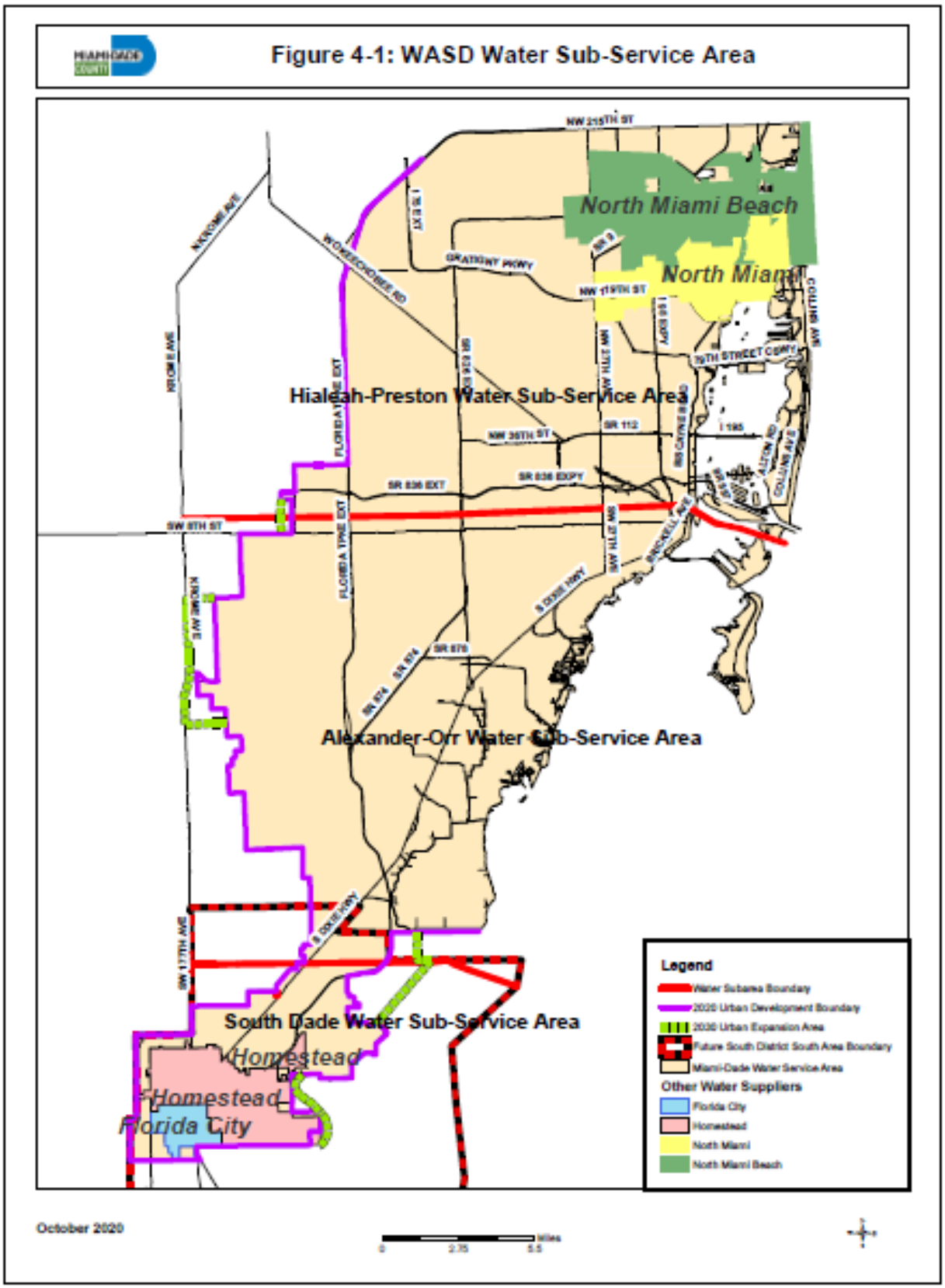


Figure 4-1: WASD Water Sub-Service Area
North Miami Beach
North Miami
Hialeah-Preston Water Sub-Service Area
Alexander-Orr Water Sub-Service Area
South Dade Water Sub-Service Area
Homestead
Homestead
Florida City
Legend
Water Subarea Boundary
2020 Urban Development Boundary
2020 Urban Expansion Area
Future South District South Area Boundary
Miami-Dade Water Service Area
Other Water Suppliers
Florida City
Homestead
North Miami
North Miami Beach
October 2020

TABLE 4-3 WASD Historical Water Use (2015-2019)

1	2	3	4	5	6	7	8	9	10	11	12	13
FINISHED WATER HISTORICAL USE							**RAW WATER HISTORICAL USE**					**Ratio Raw: Finished (Total Annual Use)**
Year	**Population Served ***	**Per Capita Usage (gpcd)**	**Total Annual Use (MG)**	**Average Month Use (MG)**	**Max Month Use (MG)**	**Ratio Max: Avg. Month**	**Per Capita Usage (gpcd)**	**Total Annual Use (MG)**	**Average Month Use (MG)**	**Max Month Use (MG)**	**Ratio Max: Avg. Month**	
TOTAL WASD WATER SYSTEM SERVICE AREA **												
2015	2,281,851	135.68	113,007	9,417	9,859.7	1.05	144.69	120,511	10,043	10,526	1.05	1.07
2016	2,306,905	139.42	117,715	9,810	10,143.9	1.03	150.19	126,465	10,539	11,042	1.05	1.07
2017	2,331,959	138.80	118,143	9,845	10,288.3	1.05	149.42	127,182	10,599	11,075	1.00	1.08
2018	2,357,013	139.19	119,750	9,212	10,336.0	1.12	150.71	129,658	10,805	11,163	1.03	1.08
2019	2,382,067	135.60	117,896	9,825	10,191.5	1.04	145.66	126,646	10,554	10,961	1.04	1.07
3-year Avg. (2071-2019)	-	137.86	-	-	-	1.07	148.60	-	-	-	1.02	1.08

* Source of Population Information: Miami-Dade County RER, Research and Economic Analysis Section, 2010 Census, 2015 TAZ revised population data.
**Historical Raw and Finished Water Use as reported to SFWMD.

TABLE 4-4 WASD PROJECTED FINISHED WATER DEMANDS

1	2	3	4	5	6	7	8	9
	WASD SERVICE AREA PROJECTIONS							
Year	Pop.[a]	Finished Water Per Capita[b] (gpcd)	Finished Water Demand (MGD) [c]	Cumulative Water Conservation [d] Credit (MGD)	Projected Demand with Conservation Credit (MGD)	Adjusted Finished Water Per Capita [e] (gpcd)	Homestead (1.3 MGD) & Port of Miami (1 MGD) Demand[f])	Total Finished Water Demand (MGD)
System-Wide								
2020	2,407,121	137.86	331.86	0.26	331.60	137.76	1.3	332.90
2025	2,533,548	137.86	349.29	1.56	347.73	137.25	2.3	350.03
2030	2,659,975	137.86	366.72	2.86	363.86	136.79	2.3	366.16

Footnotes

(a) Population Served represents the 2015 TAZ revised population projections based on 2010 Census Data provided by Miami-Dade County RER, Research and Economic Analysis Section.

(b) The per capita use was determined by taking a 3-year average from 2017 to 2019.

(c) Finished Water Demand was calculated with the 3-year average per capita of 137.86 gpcd.

(d) WASD has been successful in executing its water conservation program since its inception in 2007. Through the end of fiscal year 2019, a cumulative total of 15.80 MGD of water has been saved since implementation of the water conservation program. A systemwide total of 0.26 MGD/year is planned through 2040 for an additional cumulative total of 5.46 MGD.

(e) Adjusted per capita after taking credit in finished water demand projections for reductions in finished water use associated with water conservation.

(f) The demand for Homestead is based on the City's existing 20-year water wholesale agreement with WASD to purchase up to 3 MGD of water to meet the demands of its retail customers. The City purchases an annual average of 1.7 MGD, and a total of 1.3 MGD is planned for future demands. The demand for PortMiami is based on the anticipated expansion of the Port as contemplated in its facilities Master Plan.

4.5 Water Conservation and Reuse

4.5.1 WASD

4.5.1.1 Water Conservation

Miami-Dade Water and Sewer Department has been very successful in executing its water conservation program and continues to implement ways for reducing non-revenue water. The WASD 20-year Water Use Efficiency Goal Based Plan (Plan) was approved by the SFWMD in May 2007. Included in the 20-year Plan is the Water Conservation Best Management Practices (BMP) Implementation Schedule, Costs, and Savings Projections through the year 2026. (See Appendix E). Currently, WASD is implementing the BMPs included in the Plan (See Appendix F-Annual Water Conservation Plan Report). The most popular component of the water conservation program offers residents incentives to reduce indoor water use by providing financial rebates toward the purchase of high efficiency toilets, faucets and showerheads. There are also financial rebates to reduce outdoor water use which are available through landscape irrigation assessment rebates. In the most recent year, WASD issued over 2,300 single-family, multi-family senior and commercial high efficiency toilet rebates, over 900 high efficiency faucet and showerhead rebates; over 120 landscape evaluation rebates and distributed approximately 2,100 high efficiency showerheads to Miami Dade county residents.

The water conservation program also includes an education component conducting outreach to various organizations within the county (i.e. homeowner associations, county agencies, municipalities, schools, colleges, universities and not for profits) to educate residents about the importance of water conservation, services provided by the utility and the high-quality drinking water available to residents. The Water Use Efficiency Plan also includes a water loss reduction component which implements an annual leak detection survey of the county's entire water distribution system. Advanced technology (i.e. implementation of mobile/fixed network systems) is used to detect leaks which are followed up by repairs.

Additionally, Miami-Dade County has enacted water use efficiency-legislation including permanent landscape irrigation restrictions, landscape ordinances requiring Florida Friendly landscaping in new construction, in right of ways, and the installation of high efficiency plumbing fixtures in new construction (see Appendix D) and some reuse within the three wastewater treatment plant sites or in their vicinities. Furthermore, WASD is working on revising the County's year-round permanent landscape irrigation rule to comply with the District's model year round ordinance. The final document is anticipated to be presented to the Miami-Dade County Board of County Commissioners in December 2020.

Water conservation activities are funded annually through the operations and maintenance budget and are therefore not included in capital budgets. WASD's water conservation initiatives comply with SFWMD Water Use Permit No. Re- Issue 13-00017-W, Limiting Condition Nos. 17. For more information about WASD's Water Conservation Program please go to http://www.miamidade.gov/conservation/home.asp

4.5.1.2 Wastewater Reuse

The County's projected finished water demands are now markedly lower than anticipated when the first 20-year water use permit application was submitted. As such, wastewater reuse to address water supply demands is no longer required, and other alternative water supplies (Floridan aquifer, water conservation, C-51 reservoir, etc.) have been determined to be more viable and shall be considered in the future. WASD is currently implementing a total of 16.49 MGD of reuse at each of the Wastewater Treatment Plants, primarily for in-plant (process water) use. In addition, WASD will be providing up to 15 MGD of reclaimed water from the South District Wastewater Treatment Plant to the FPL facilities at Turkey Point, per Miami-Dade County Resolution No. R-579-20 approved by the BCC on June 16, 2020.

4.5.2 Other Water Suppliers

4.5.2.1 City of North Miami

The City of North Miami has developed a water conservation plan to help reduce the demand for potable water and lower its consumption on a per capita basis. The conservation plan includes the adoption of Florida friendly landscaping methods, the implementation of a water conservation public education program, the implementation of a leak detection program, water loss prevention programs, and the exploration of the utilization of reuse water for irrigation and non-potable water uses.

The City is also implementing an incentive program and encouraging the development of "green buildings". They will also continue to enforce the wellfield protection ordinance which limits the allowable land uses within the wellfield's cone of influence and will continue to monitor water quality levels in the drainage basins to maintain a minimum level of service standards. Currently, all the City's wastewater is treated by WASD

4.5.2.2 City of North Miami Beach

The City of North Miami Beach has seen major successes in ways of alerting and educating residents on water and environmental conservation. In 2005, the City created a Water Conservation Program that applies conservation methods to reduce water demand and to lower the per capita consumption of potable water. The program includes collective efforts to increase the overall water use efficiency and to

limit water losses to 10 percent or less. They have also initiated a water conservation educational and outreach program. Another aspect of the conservation program is the continuation and installation of water efficient landscape, plumbing and irrigation ordinances, as well as a water shortage and emergency ordinance. In addition, they have begun the use of alternative water sources, mainly the Floridan aquifer. Other methods for water conservation taking place at the City include meter replacements and a showerhead exchange program.

Also, the North Miami Beach Water fund established the Foundation for Water and Environmental Education which is a not-for-profit organization with funds and programs managed by its own directors and established to maintain and aid water resource management in the City of North Miami Beach community.

4.5.2.3 City of Homestead

The City of Homestead has developed a water conservation plan to reduce potable water consumption. The plan includes a permanent irrigation ordinance which establishes irrigation restrictions prohibiting landscape irrigation between 9:00 AM and 4:00 PM., a Florida Friendly ordinance that promotes use of drought landscape methods, a high efficiency plumbing fixture ordinance that establishes water conservation standards for plumbing fixtures installed in new construction, and a leak detection program. In addition, the City has a residential and commercial meter replacement program where all meters will be replaced within the next 5 years. The City will adopt Automatic Meter Reading technology which allows the reading of water consumption remotely which will allow accurate and true monthly readings. Also, the City is implementing a rain sensor device ordinance that requires all irrigation systems equipped with automatic controls to have a rain sensor switch which turns off the system when more than 0.5 inches of rain has fallen. A water conservation education program is also taking place.

The City has also implemented a reclaimed water system, where most of the wastewater from the City's sewer service area is treated at the City's Wastewater Treatment Plant (WWTP). The wastewater from the City's WWTP receives treatment (including ultra-violet radiation to eliminate the possible formation of disinfection by-products) and is reused to recharge the surficial aquifer. 100% of the City's WWTP output [approximately 6 MGD (4.730 MGD, average)] is currently recharging the aquifer via two primary and four secondary rapid infiltration trenches.

4.5.2.4 Florida City

Florida City is currently implementing a water main replacement program, where they are abandoning all existing 2, 4 and 6-inch diameter mains and installing new 8 and 12-inch diameter DIP water mains. This program is intended to reduce non-revenue water through the elimination of leaks.

Section 5
Planned Water Supply Facilities

This section details the water supply facilities that are planned in order to meet Miami-Dade Water and Sewer Department's (WASD) water demands through the 10-year horizon (2030). The County's projected finished water demands are now significantly lower than anticipated when the first 20-year water use permit (WUP) application was submitted to South Florida Water Management District (SFWMD) in 2007. The decrease in water demands has been a result of numerous drivers internal and external to WASD. Over more than a decade, Miami-Dade County's per capita water consumption and overall drinking water production have decreased significantly. As such, reuse to address water supply is no longer required or needed. The evolution of water demands can primarily be attributed to the following factors:

- Deceleration of population growth
- WASD's water conservation program yielding reduced per capita water consumption
- Permanent year-round irrigation restrictions
- Landscape ordinances requiring Florida Friendly Landscaping
- Florida Building Code changes requiring higher efficiency fixtures for new construction
- Evolving trends in housing demographics (apartment development versus single family homes), and water use practices
- Increases in water and sewer rates

This section details the existing water supply projects in the current WASD 20-Year WUP that are anticipated to meet demands through the planning period.

5.1 Alternative Water Supply Projects

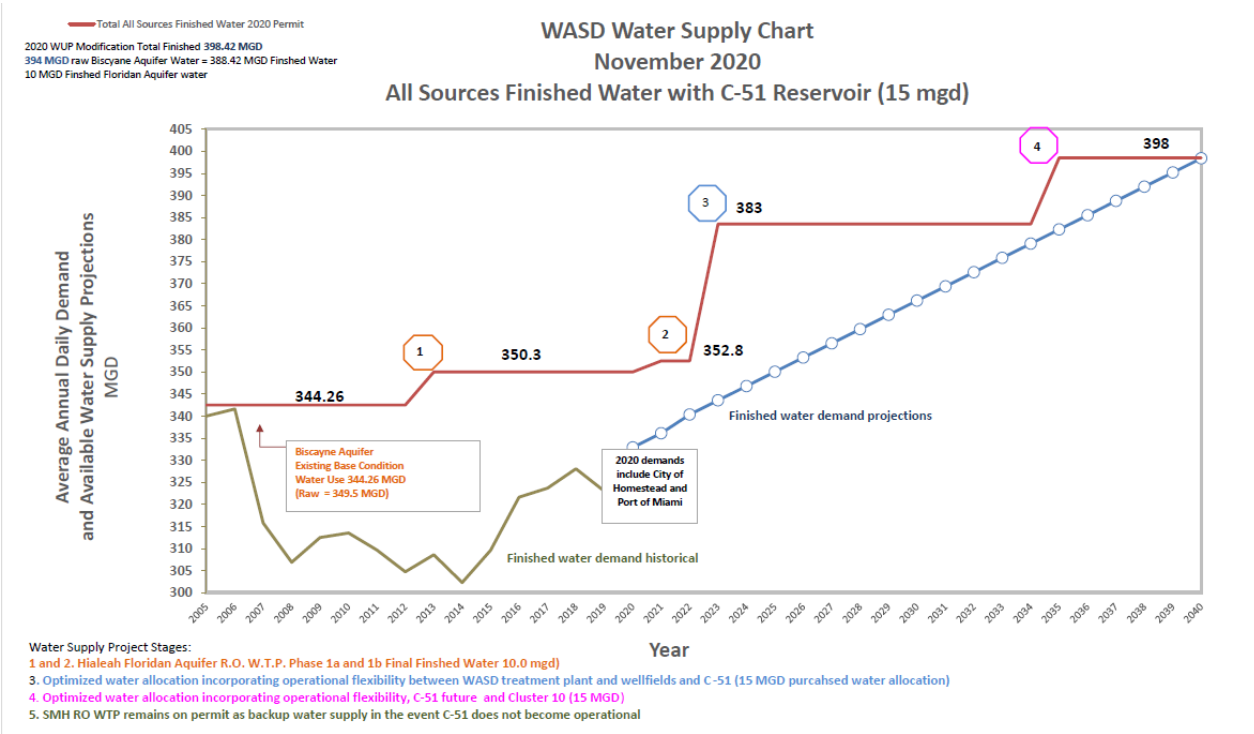
WASD's alternative water supply projects are included in Exhibit 7 of the County's 20-Year WUP and are presented in Table 5-1. The proposed alternative water supply projects and WASD's plan to address future water demands are presented in Figure 5-1.

As indicated in Figure 5-1, water supply projects in WASD's WUP address anticipated demands through the Water Supply Facilities Work Plan 10-year planning horizon (2030). These projects will undergo further refinement as necessary as conditions evolve, and any updates to address longer-term demands will be reflected in future WUP modifications submitted to SFWMD. All future projects consider that current wholesalers will remain on the WASD system through 2042.

Table 5-1: WASD Alternative Water Supply Projects in WASD's WUP, Exhibit -7, March 8, 2022

Completion Date	Annual Average Finished Water Quantity in MGD and Source		
Completed	7.50	Hialeah Floridan Aquifer RO WTP-Phase 1-a, 10 MGD & 6 Floridan Aquifer supply wells	AWS
12/31/2022	2.50	Hialeah Floridan Aquifer RO WTP-Phase 1-b, 4 Floridan Aquifer supply wells	AWS
10/31/2022	15.00	C-51 Reservoir	AWS
12/31/2026	12.45	South Miami Heights WTP Back-Up Phase 1(RO portion)	AWS
12/31/2033	5.00	South Miami Heights WTP Back-Up Phase 2(RO portion)	AWS
Total	42.45		

Figure 5-1: WASD 2030 Projected Water Demands vs. Planned Water Supply Projects



5.1.1 Hialeah Floridan Aquifer RO WTP (10 MGD)

A new upper Floridan Aquifer Reverse Osmosis (RO) water treatment plant was constructed in 2013, and, is located at 4250 W. 114th Terrace in the City of Hialeah. The WTP was constructed pursuant to a Joint Participation Agreement between the City of Hialeah and the County which was approved by the Board of County Commissioners on July 24, 2007 and called for the design, construction, and operation of a water treatment plant constructed in the annexation area and supplied by the brackish Floridan aquifer to produce initially 10 MGD with the capacity to expand to 17.5 MGD.

Approval from the Florida Department of Health to produce and distribute water was received in November 2013. The WTP utilizes the Floridan Aquifer as the alternative water supply using the RO treatment to remove the salt. The initial operational phase of the Plant is 7.5 MGD, increasing to 10 MGD by the end of 2020 when construction of additional wells is expected to be completed.

5.1.1.1 Hialeah Floridan Aquifer RO WTP Phase 1-a (7.5 MGD)

Phase 1-a of the RO WTP included a 7.5 MGD plant and an initial six (6) Floridan Aquifer supply wells. The Phase 1-a cost was about $95 million, and has been completed.

5.1.1.2 Hialeah Floridan Aquifer RO WTP Phase 1-b (2.5 MGD)

Phase 1-b of the RO WTP will consist of the construction of four (4) Floridan

Aquifer supply wells for a maximum treatment capacity of 10 MGD. The Phase 1-b cost is estimated at approximately $5 million, and, is anticipated to be completed by the end of 2022.

5.1.2 Back-Up South Miami Heights WTP and Wellfield 17.45 MGD (23.27 MGD raw water) Floridan Aquifer RO and 2.90 MGD (3.0 raw water) Biscayne Aquifer

The South Miami Heights Water Treatment Plant (WTP) remains on the Water Use Permit as back-up water supply in the event the C-51 Reservoir does not occur. The WTP will be located at 18800 SW 208 Street in Miami. The RO WTP and associated facilities will have a capacity to produce 20.35MGD finished water using a combination of 17.45 MGD from the Floridan Aquifer and 2.90 MGD from the Biscayne Aquifer.

5.1.3 Water Use Permit Modification

The most recent WUP modification was issued on March 8, 2022 with an expiration date of December 27, 2065 and an annual allocation of 148,018.00 million gallons (405.53 MGD) to year 2042. The WUP modification includes optimization of Biscayne Aquifer (BA) water supplies through improved wellfield operations and the C-51 Reservoir project.

The SFWMD has designated the C-51 Reservoir Phase 1 Project as pilot alternative water supply development project. On March 6, 2020, WASD submitted a letter of intent to the SFWMD indicating its intention to participate in the C-51 Reservoir project. In addition to participation in C-51, WASD intends to optimize wellfield operations to maximize use of wet and dry season non-regional flows throughout Miami-Dade County by leveraging operational flexibility between Miami-Dade WASD's water treatment plants and wellfields.

5.2 Miscellaneous Projects

5.2.1 Water Conservation

WASD has been very successful in executing its Water Use Efficiency Plan (Plan). The Plan, developed as a strategy to decrease consumption while avoiding costly alternative water supply projects, was developed in 2007 and includes a water conservation element implementing best management practices (BMPs) for both indoor and outdoor water use throughout the County. High efficiency fixture rebates, targeting properties constructed before 1996, offer residents a financial incentive to reduce indoor water use by installing high efficiency toilets, faucets and showerheads. Landscape irrigation rebates evaluate existing in-ground irrigation systems and recommend changes that reduce outdoor water use. In

addition to indoor and outdoor BMPs, the conservation program also includes an education component, to organizations throughout the County (i.e. homeowner

associations, county agencies, municipalities, schools, colleges, universities, not for profits, etc.) to inform residents about the importance of water conservation.

As a result of these efforts, the County has achieved 16.19 MGD of water savings through fiscal year 2021. The Plan also contains a water loss reduction component including an annual leak detection survey of the county's entire water distribution system. In addition to standard operating procedures, advanced technology is used to detect leaks including the implementation of mobile and fixed network systems. Leaks detected are categorized by priority with the highest priority leaks being repaired first. As a result, several hundreds of leaks are identified and repaired annually.

5.3 20-Year Work Plan and Capital Improvement Plan

As indicated in the previous sections, the latest lower population projections based on the 2010 Census and 2015 revised TAZ projections results and historically lower per capita daily finished water consumption have reduced the projected finish water demands, thus deferring the need for alternative water supply projects by several years. The existing Alternative Water Supply projects to address water demands through 2042 include the Hialeah RO, C-51 Reservoir and South Miami Heights back-up WTP.

The projects in the 10-Year Work Plan have been included in the County's adopted FY 2021-2027 Budget. A copy of the County's adopted FY 2021-2027 Budget is contained within Appendix B.

5.4 Other Water Suppliers Future Plans

5.4.1 City of North Miami

The City of North Miami's plans for a two-phase expansion of the Winson WTP have been put on hold. The plans entailed a Phase I, to be concluded by 2010, to add an additional 8.5 MGD capacity from a Reverse Osmosis (RO) system. Phase II to add additional membrane treatment to the RO facility, which would create an additional 4.0 MGD capacity. The proposed improvements would total an increase of 12.5 MGD to the capacity of the WTP.

The City also identified that the Floridan aquifer would be the only water resource alternative for the increase in demand. Therefore, the City planned to construct an additional ten Floridan wells to supply the RO Facility. The City planned to add a raw water transmission main from the wells to the WTP.

On hold is also the third expansion plan for the addition of a 5 MG storage tank, to be located on a vacant parcel owned by the City's new Biscayne Landing development. The City may decide to forgo with the construction of the tank and utilize the parcel for another smaller RO Treatment facility or a reuse facility.

These water supply system improvements planned by the City of North Miami will provide water supply for those portions of unincorporated Miami-Dade County which are currently served by the City of North Miami. The City is currently designing upgrades to the existing facility to maximize its efficiencies.

5.4.2 City of North Miami Beach

The City of North Miami Beach plans to increase the capacity of the its WTP to 35 MGD by 2020 and 38 (MGD) by 2025. These water supply system improvements planned by the City of North Miami Beach will provide water supply for those portions of unincorporated and incorporated Miami-Dade County which are currently served by the City of North Miami Beach.

5.4.3 City of Homestead

The City of Homestead is currently in the process of analyzing the different ways of improving or expanding their systems to increase capacity as the population within its municipal boundary and in parts of unincorporated Miami-Dade County where it provides water increases. The two major alternatives are either upgrading the existing well pumping capacity or installing additional wells. However, the City has not yet agreed on any type of improvements, and therefore no additional information can be provided at this time.

5.4.4 Florida City

Due to the fact that the SFWMD is currently adjusting any further withdrawals from the Biscayne aquifer, the City plans to increase its Water Treatment Plant capacity by installing additional wells and withdrawing water from the Floridan aquifer, which will require membrane filtration treatment and chlorination prior to distribution. The timeline for this expansion is not yet known.

5.5 Intergovernmental Coordination

Miami-Dade Water and Sewer Department participates and coordinates in regional planning and management activities undertaken by State, federal and regional agencies regarding water supply. These include, but are not limited to the SFWD Lower East Coast Water Supply Plan, Everglades National Park, Biscayne National Park, and the Southeast Florida Regional Climate Change Compact. In addition, WASD coordinates with its retail and wholesale municipal customers. Meetings are held with the local governments to address water supply issues and needs that include Water Supply Plans, and wholesale customer's rates and agreements.

5.6 Conclusion

WASD's Water Supply Facilities Work Plan demonstrates that the Department, through projects identified in its capital improvement program and current Water Use Permit, is able to meet the projected water demands through the 10-year planning horizon (2032).

Section 6
Climate Change and Sea Level Rise Plan

This section details WASD's evaluation and planning for sea level rise and climate change over the planning horizon in this document. The primary concern to WASD water supply is salt water intrusion into the freshwater Biscayne aquifer, the primary source of drinking water in Miami-Dade County. Results of evaluation and data analysis completed to date indicate that within the next twenty years WASD will be able to operate its wellfields and water treatment facilities as designed, as groundwater modeling indicates even with a high level of projected sea level rise WASD's wellfields will not be impacted by salt water intrusion.

6.1 Introduction

Southeast Florida is one of the most vulnerable regions to the impacts of climate change and sea level rise as a result of our flat topography, porous limestone geology, and dense coastal development. Climate change and sea level rise are expected to present significant challenges relating to water resource planning, management and infrastructure for the counties located in south Florida, including Broward, Miami-Dade, Monroe, and Palm Beach Counties. These counties have agreed to partner in regionally-coordinated climate mitigation and adaptation strategies as part of the Southeast Florida Regional Climate Change Compact and have adopted a Regional Climate Action Plan which highlights "Water Supply, Management, and Infrastructure" as a primary focal area (http://southeastfloridaclimatecompact.org).

Investigations and evaluations conducted at the national, regional, and local levels have reinforced the need to plan for the predicted impacts of more frequent and severe drought, increases in tidal and storm-related flooding, and the loss of coastal wellfield capacity due to saltwater intrusion. In the absence of proactive planning, these impacts will present liabilities for coastal and inland communities with implications for urban water supplies, water and wastewater infrastructure, and both regional and local drainage/flood control systems. Investments in water supply planning and infrastructure that account for these predicted trends will improve the resilience of our communities, provide public health benefits, and reduce the potential for economic losses.

Miami-Dade County along with Broward, Monroe, Palm Beach Counties, local governments and water utilities in the southeast Florida region have formalize the integration water supply and climate change considerations as part of coordinated planning efforts, including updates to local government and water utility 10 year Water Supply Facility Work Plan and enhancements to local government's Comprehensive Plans. Key considerations for communities within the four County

Compact planning area areas include: 1) sea level rise, 2) saltwater intrusion, 3) extreme weather, and 4) infrastructure investments to support diversification and sustainability of water supply sources, and adaptive stormwater and wastewater systems. Sea level rise produces varied challenges with the respect to water resources sustainability, water management, and water/wastewater facilities and infrastructure. Impacts include salt water intrusion into coastal wellfields, infiltration of groundwater with chloride levels into wastewater collection systems, impairing normal operations and maintenance as well as challenges for beneficial use of reclaimed water as an alternative water supply. Water management systems are also at risk with systems constrained by rising groundwater and canal gate tailwater elevations, which reduce soil storage and discharge capacity, with increased potential for both inland and coastal flooding.

6.2 Miami-Dade County Sea Level Rise and Climate Change Recent Government Action

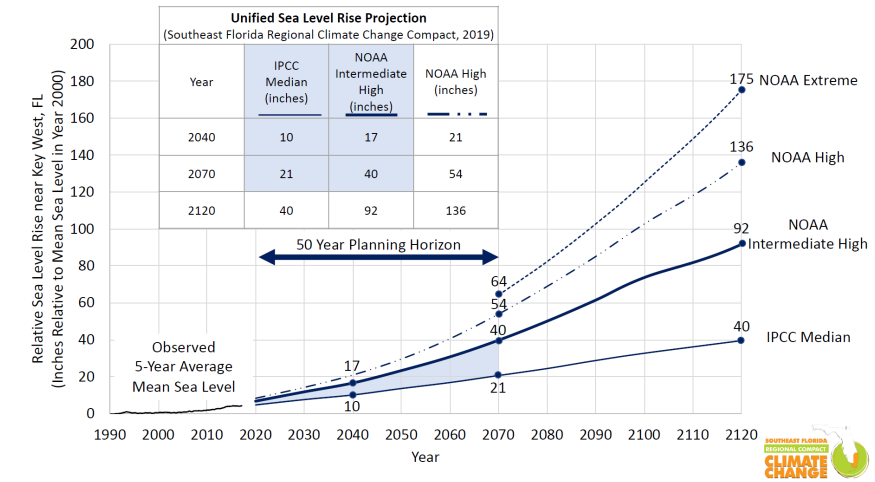
As part of the Miami-Dade County Evaluation and Appraisal Report adopted in 2011, climate change was identified as one of the priorities to address in the County's Comprehensive Development Master Plan (CDMP). Miami-Dade has incorporated climate change considerations and language in several of the Elements of the CDMP update which was approved by the Board of County Commissioners in October 2013.

The Miami-Dade Sea Level Rise Task Force was created by Resolution R-599-13 on July 2, 2013 to review the relevant data and prior studies, assessments, reports, and evaluations of the potential impact of sea level rise on vital public services and facilities, real estate, water and other ecological resources, water front property, and infrastructure (http://www.miamidade.gov/planning/boards-sea-level-rise.asp).

Miami-Dade Board of County Commissioners adopted an ordinance in September of 2019 relating to the rules of procedures of the Board of County Commissioners amending Section 2-1 of the Code of Miami-Dade County, Florida, to require that in all agenda items related to planning, design, and construction of county infrastructure a statement be included that the impact of sea level rise has been considered.

For all planning purposes Miami-Dade County relies upon the Unified Sea Level Rise Projection for Southeast Florida developed by the South Florida Regional Climate Change Compact (Figure 6-1). The projection was updated in 2019 by a panel of scientists to reflect the best available data. The latest science indicates that mean sea levels could be between 10 to 17 inches higher than 2000 levels by 2030. By 2070, average levels are expected to be 21 to 40 inches higher.

Figure 6-1: Southeast Florida Regional Climate Compact SLR Projections



[1] Southeast Florida Regional Climate Change Compact Sea Level Rise Work Group (Compact) October 2015. *Unified Sea Level Rise Projection For Southeast Florida*. A document prepared for the Southeast Florida Regional Climate Change Compact Steering Committee
[2] These changes are all relative to the baseline year 1992.

Greater Miami & the Beaches (GM&B) is a collaboration among Miami-Dade County and the cities of Miami and Miami Beach, created to respond to the global trends major cities face including urbanization, globalization and climate change. GM&B was selected to join the 100 Resilient Cities Program pioneered by the Rockefeller Foundation in 2016. In 2019, GM&B released the Resilient305 Strategy that addresses prioritized resilience challenges, which was developed through extensive intergovernmental and community collaboration (https://resilient305.com/). The resilience strategy is designed to address GM&B's key shocks and stresses, such as hurricanes and infrastructure failure. The strategy includes actions related to water management including water quality, flooding mitigation, and infrastructure hardening.

As a 100 Resilient Cities partner MDC was eligible and selected as one of five global communities to pilot the City Water Resilience Approach to diagnose the strengths and weaknesses of the water system using quantitative and qualitative indicators and to develop an action plan that builds water resilience. WASD led this process that bridged water, wastewater, and stormwater management, both upstream and downstream of our county, and which directly advances water-related actions in the Resilient305 Strategy, particularly Action 54: Employ a One Water Approach. Some key messages we heard from our stakeholders include the importance of better coordination between water stakeholders, the need for catchment-level partnerships and water management projects and practices, and a strong call for sharing water

quality and related data to ensure evidence-based decision-making, and the need for proper valuing of ecosystem services.
https://www.resilienceshift.org/publication/greater-miami-water-resilience-profile-cwra/

6.3 Saltwater Intrusion

Along the coast of southeast Florida, and several miles inland, groundwater supplies and potable wells are vulnerable to saltwater contamination. The Biscayne Aquifer, which serves as the region's primary water supply, is a shallow, surficial, unconfined aquifer characterized by limestone karst geology which is highly porous and transmissive. Saltwater intrusion is defined by the South Florida Water Management District (SFWMD) as chloride concentrations exceed drinking water standards of 250 mg/l. The SFWMD has identified utilities with water supply sources near the saltwater interface that could be vulnerable to saltwater intrusion of reduced availability during severe drought conditions (SFWMD LECWSP 2018 Appendix D). MDWASD South Dade wellfields were identified as wellfields near the saltwater interface and that do not have a western wellfield, have not developed alternative water sources, and/or have limited ability during a drought to meet user needs through interconnects with other utilities. MDWASD Miami Springs and Hialeah Preston wellfields were identified as near the saltwater interface but have access to other water sources during drought conditions.

6.3.1 Salt Intrusion Monitoring Network

Saltwater intrusion in Miami-Dade County is monitored through a joint effort of the Miami-Dade Water and Sewer Department (WASD), Miami-Dade Department of Regulatory and Economic Resources (RER), and the U.S. Geological Survey (USGS). A network of small diameter wells have been drilled to the base of the aquifer to serve as monitor wells to identify the location of the saltwater intrusion front. The salt front is identified as the location, at the base of the aquifer, of the 1,000 milligrams/per liter (mg/L) isochlor, or line of equal chloride concentration of 1,000 mg/L). Sampling of the monitor wells is done by the USGS, under a co-operative Joint Funding Agreement (JFA # 19ESFL00000013) contract with Miami-Dade County for wells currently included in the salt front monitoring program. Additional wells are sampled quarterly or yearly basis depending on well location, but every year the sampling schedule includes a county-wide sampling event conducted at the height of the dry season to coincide with the time when inland movement of the saltwater front would be at its peak. The data derived from that sampling is used by the USGS to identify any significant movement of the salt front, and to map the location of the salt front if a significant movement is evident. WASD reports the data to the South Florida Water Management District (SFWMD) quarterly, as part of the

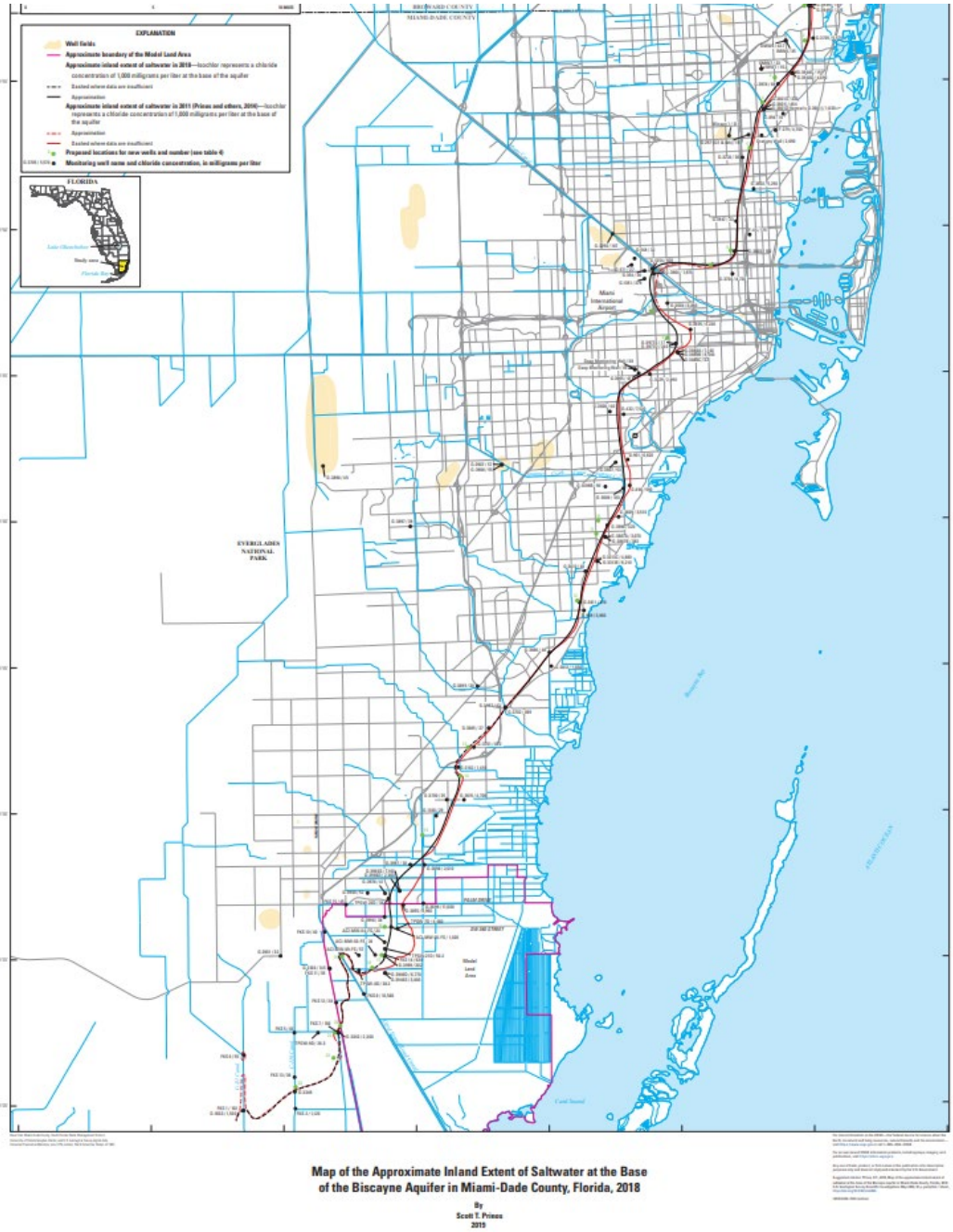
WUP #13-00017-W requirements, and is required as part of Special Permit Condition 37 of the 20-Year WUP (SFWMD, 2015; Appendix H) to submit an annual report summarizing the data collected and recommendations for adjustments to the salt front monitoring network as a result of data analysis.

6.3.2 Salt Intrusion Front Delineation

Miami-Dade WASD entered into a JFA with the USGS in 2007 (JFA #08E0FL208004) to delineate the current extent of saltwater intrusion in the Biscayne aquifer, to characterize how the extent has changed since the last mapping effort, to improve salinity monitoring in the Biscayne aquifer and to identify the sources of the saltwater to better understand the actions required to prevent or mitigate saltwater intrusion. Additionally, a Joint Funding Agreement No. 17ESFL000000108 for fiscal years 2017-2019 executed in April 2017. Through supplemental agreement No. 1 a 2-year extension to this JFA was provided on May 7th, 2019, which extended the JFA to September 30th, 2021. Additionally, 10-year JFA was signed to conduct chloride monitoring in December 2018 (JFA# 19ESFL000000103). As part of this effort, since 2014 eleven new monitoring wells have been installed in areas where there was insufficient information to identify the location of the front, and data from geophysical tools and techniques were incorporated into the analysis. To improve accessibility of salinity monitoring information to the public, the USGS cooperative water conditions website was improved and a new website created. "Saline Intrusion Monitoring, Miami-Dade County, Florida," serves data collected during this study, as well as data from the active salinity monitoring network, and provides the interpreted maps of the inland extent of saltwater intrusion (https://fl.water.usgs.gov/mapper/)). This website allows the USGS to deliver timely hydrologic data, analyses, and decision-support tools concerning saltwater intrusion. As a result of the JFA, updated salt front maps have been published in 2014, and 2019 (Prinos et al, Prinos et all 2014; Prinos, 2019). (Figure 6-3).

Figure 3. https://pubs.usgs.gov/sim/3438/sim3438.pdf

Figure 6-2 Miami-Dade 2018 Salt Front Map



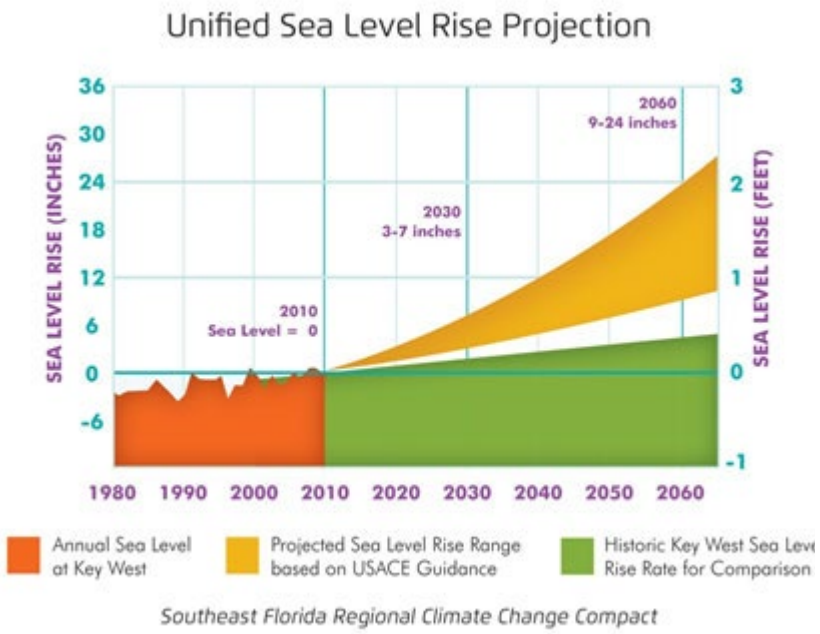
6.4 Urban Miami-Dade County Surface Water/Groundwater Model

Miami-Dade County entered into a Joint Funding Agreement (JFA 08E0FL20817) with the USGS in February 2008 to develop an integrated surface/groundwater numerical flow model, with one of the objectives of the project to evaluate if sea level rise will cause salt water intrusion into coastal wellfields. The numerical model is designed among other uses to evaluate if the current surface-water structure control operational criteria effectively control saltwater intrusion with projected population increase and sea level rise. WASD and the USGS use this integrated surface-water/groundwater model to evaluate how the position of the freshwater/saltwater interface will change with increased well field pumpage, increased sea level, and a combination of increased well field pumpage and increase sea level.

The model was developed and calibrated a coupled surface-water/groundwater model of the urban areas of Miami-Dade County, Florida. The model is designed to simulate surface-water stage and discharge in the managed canal system and dynamic canal leakage to the Biscayne aquifer as well as seepage to the canal from the aquifer. The model was developed using USGS MODFLOW-NWT with the SWR1 Process and the SWI2 Package to simulate the surface-water system and seawater intrusion, respectively (Hughes et. al., 2013). Automated parameter estimation software (PEST) and highly-parameterized inversion techniques were used to calibrate the model to observed surface-water stage, surface-water discharge, net surface-water sub-basin canal discharge, and groundwater level data from 1997 through 2004 by modifying hydraulic conductivity, specific storage coefficients, specific yield, evapotranspiration parameters, canal roughness coefficients (Manning's *n* values), and canal leakance coefficients (Walsh and Hughes, 2014).

WASD and the USGS used the modified guidance developed by the U.S. Army Corps of Engineers (USACE, 2011) and a planning scenario of 9 to 24 inches additional rise by 2060, consistent with projections presented in the 2014 NCA, and formally adopted by the partner counties in the Southeast Florida Regional Climate Change Compact (Figure 4) for the modeling effort.

Figure 6-3: Unified Southeast Florida Sea Level Rise Projection for Regional Planning Purposes (2014)



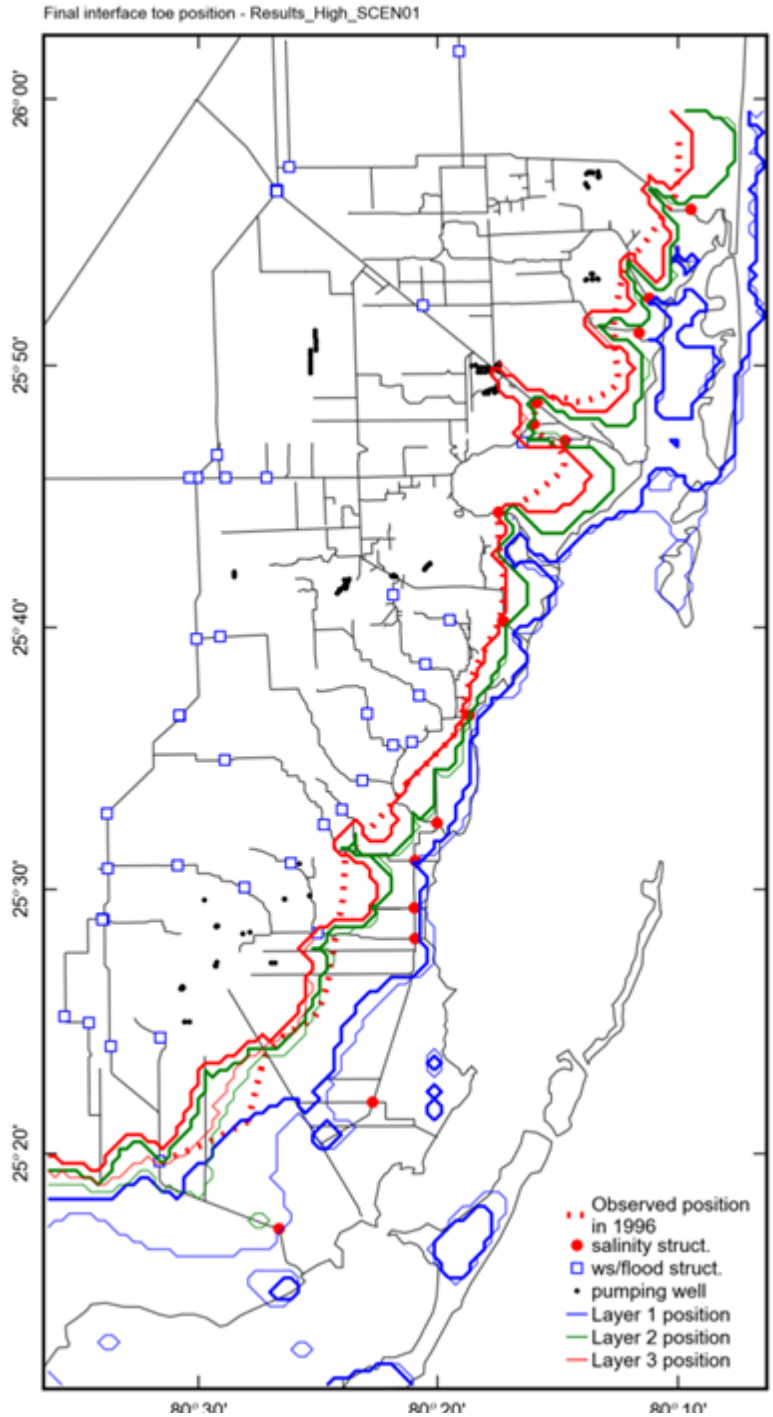
The USGS completed the model and initial scenarios regarding sea level rise, and results were published in 2014 (Hughes et al., 2014; link: https://pubs.usgs.gov/sir/2014/5162/). The model simulation period is from 1/1/1996 to 12/31/2010, with daily surface-water and groundwater timesteps. The model was calibrated using highly-parameterized inversion methods, with an 8-year calibration period (1997-2004) and a 6 year verification period (2005-2010). To represent future conditions, 30-year scenario simulation periods representing conditions from 2011 through 2040 were run. The thirty-year scenario period was chosen as being scientifically defensible at this point in time, with available sea level rise and climate change data available. The results of this work indicated that WASD's wellfields will not be impacted by sea level rise through the 2040 planning horizon.

Section 3.0. of the Applicant's Handbook stated the basic requirements for modeling evaluation period: "the simulation model run shall be conducted using monthly stress periods starting with a minimum of three months of average annual demand and rainfall, followed by twelve months of 1-in-10-year drought conditions, followed by a minimum of six months of average annual demand and rainfall." The model impact period was selected from November 2008 to October 2009, with 2009 being

the driest overall year in the 15-year simulation period. Hence, use of the period between November 2008 to October 2009 for the impact evaluation meets the intent of the requirement of a year of drought conditions preceded (May 2008 to October 2009) and followed by periods of normal rainfall (November 2009 to April 2010).

WASD is in the process developing scenarios of the Urban Miami Dade Model to meet goal of the SFWMD Lower East Coast water Supply Plan Update of sufficient water supply sources and future projects to meet existing and future reasonable-beneficial uses during 1-in-10 year drought conditions through 2040 while sustaining water resources and related natural systems (SFWMD, 2018). WASD has enhanced the USGS model to optimize use of the Biscayne aquifer and WASD well field operations in order to maximize the efficient use of the resource, while minimizing impacts to the natural and regionals systems and the salt water intrusion front. The scenarios being developed include 2014 Unified Southeast Florida sea level rise projection worse case sea-level rate (1.23 ft increase over 30 years). Future modeling projects include updating the Urban Miami-Dade USGS Model with groundwater and climate data up to 2019, and including the 2019 Southeast Florida Climate Compact updated sea level rise projections.

Figure 6-4: Scenario 3 Salt Water Intrusion Results. (Walsh and Hughes, 2014).



6.5 Extreme Weather Events

As extreme events increase in frequency and severity, WASD will consider impacts and risks associated with drought, water shortages and reduced groundwater tables, all of which can hasten saltwater intrusion and exacerbate water supply impacts. Conversely, more intense and rapid rainfall will cause flooding, increased runoff, impacts to the natural systems and provide less recharge potential. Integrated water resources management strategies will help to mitigate for these impacts, particularly those projects that can serve to provide additional storage of stormwater runoff, long term storage, and redistribution of excess rainfall during dry periods and drought. Regional surface water reservoirs and belowground aquifer storage and recovery systems are potentially viable alternative water supply projects and climate adaptation strategies. Increases in groundwater elevations, in both direct and indirect response to sea level will challenge the function of drainage systems and is expected contribute to exacerbate flooding, for even mild storm events. Conditions will be more severe with extreme rainfall events can increase damage to low lying utility infrastructure and contribute to prolonged surface water flooding. Planning for the combined influences of storm events, high tides and sea level rise on drainage system functions and other public infrastructure is a critical need as is the assessment of viable water supplies and impacts to the natural systems from prolonged droughts.

WASD entered into a JFA in 2014 (JFA 14GGESMC0000110) with the USGS to continue the modeling effort, and will develop additional future scenarios with County Departments, local governments, regional agencies for further climate change and sea level rise assessment. These scenarios will include additional years simulation, changes in recharge as a result of climate change, land use changes, and revised sea level rise projections. Future model scenarios to be developed with the USGS include simulating extreme weather events superimposed on future conditions as simulated in model runs.

6.6 Infrastructure Assessment

Effective water treatment plant operations require proper control of flooding from both stormwater (riverine) and tidal sources. Comprehensive engineering analysis considers both short-term and long-term effects of climate change. Short-term effects, such as current increased sea levels and higher estimates of tidal boundary conditions, will be incorporated into the system design and operations as necessary. Potential longer-term climatic changes are typically addressed incrementally as needed through systems master planning, to provide the appropriate level of protection for the given time period, including:

- Greater levels and rates of sea level rise,
- Higher spring tides (exceptionally high astronomical tides that occur around the new and full moon when the planets align to exert maximum effect on the tides),
- Higher tidal boundary effects and backflow,
- Increased levels of tidal surge and wind and wave effects from tropical storms and hurricanes, and
- Potential changes in design rainfall depths and intensities.

WASD requires that capital improvement projects to include an assessment of climate change and sea level rise. For the past several years, WASD has been working to systematically identify the vulnerabilities of the system to climate change. WASD has been methodically developing an approach to harden projects in preparation for increased flooding and higher storm surges. New design standards are being applied to ensure new projects will be designed to provide continuity of service under future conditions projected throughout the lifetime of the assets. Hazard mitigation grant funds have also been sought and awarded to help protect the largest and most critical sewer pump stations from flooding and wind damage and to improve electrical reliability. The department is continuing to invest in improving the understanding of the vulnerabilities of the system, refining the design standards used, and improving the implementation of these standards across the enterprise.

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APPENDIX A

20-Year Water Use Permit

SOUTH FLORIDA WATER MANAGEMENT DISTRICT
WATER USE INDIVIDUAL PERMIT

APPLICATION NO: 201117-4 **PERMIT NUMBER:** 13-00017-W

DATE ISSUED: March 8, 2022 **EXPIRATION DATE:** December 27, 2065

PERMITTEE: MIAMI-DADE WATER AND SEWER DEPARTMENT
3071 S W 38TH AVENUE
MIAMI, FL 33146

PROJECT NAME: MIAMI-DADE CONSOLIDATED P W S

PROJECT LOCATION: Miami-Dade County, S-/T53S/R39E
S-/T53S/R40E

PROJECT DESCRIPTION/AUTHORIZING:

The use of groundwater from the Biscayne aquifer and Upper Floridan aquifer for Public water supply for MDWASD Service Area serving 2,912,830 persons in the year 2040 with an average per capita use rate of 139.2 gallons per day and a maximum monthly to average monthly pumping ratio of 1.05:1 with an annual allocation of 148,018.00 million gallons.

This is to notify you of South Florida Water Management District's (District) agency action concerning Permit Application Number 201117-4, received November 17, 2020. This action is taken pursuant to Chapter 373, Part II, Florida Statutes (F.S.), Rule 40E-1.603 and Chapter 40E-2, Florida Administrative Code (F.A.C.). Based on the information provided, District rules have been adhered to and a Water Use Individual Permit is in effect for this project subject to:

1. Not receiving a filed request for an administrative hearing pursuant to Section 120.57, F.S. and Section 120.569, F.S., or a request for a judicial review pursuant to Section 120.68, F.S.
2. The attached 68 permit conditions.
3. The attached 33 exhibits.

By acceptance and utilization of the water authorized under this permit, the Permittee agrees to hold and save the District and its successors harmless from any and all damages, claims or liabilities that may arise by reason of the construction, maintenance or use of activities authorized by this permit. Should you object to the permit, please refer to the attached "Notice of Rights" that addresses the procedures to be followed if you desire a public hearing or other review of the proposed agency action. Should you wish to object to the proposed agency action or file a petition or request, please provide written objections, petitions, requests and/or waivers to: Office of the District Clerk, South Florida Water Management District, 3301 Gun Club Road, West Palm Beach, FL 33406, or by email to clerk@sfwmd.gov.

I HEREBY CERTIFY THAT this written notice has been mailed or electronically transmitted to the Permittee (and the persons listed in the attached distribution list) this 8th day of March, 2022 , in accordance with Section 120.60(3), F.S. Notice was also electronically posted on this date through a link on the home page of the District's website (my.sfwmd.gov/ePermitting).

BY: Lisandra Jones
LISANDRA JONES
DEPUTY CLERK, SOUTH FLORIDA WATER MANAGEMENT DISTRICT

SPECIAL PERMIT CONDITIONS

1. This permit is issued to:
   MIAMI-DADE WATER AND SEWER DEPARTMENT
   3071 S.W. 38TH AVENUE
   MIAMI, FL 33146

2. This permit shall expire on December 27, 2065.

3. Use classification is:

   Public Water Supply
   Aquifer Storage And Recovery

4. Source classification is:

   Groundwater from:
   Biscayne Aquifer
   Upper Floridan Aquifer

5. Allocation:

   Total annual allocation is 148,018.00 million gallons (MG). (405.53 MGD).

   Total maximum monthly allocation is 12,951.61 MG.

   Between March 12, 2042 and December 27, 2065, without renewal of the base condition allocation, withdrawals from the Biscayne aquifer that are offset from the C-51 Reservoir, Phase 1 Project shall be limited to:

   Annual allocation shall not exceed 5,475 MG (15 MGD).

   Maximum monthly allocation shall not exceed 479 MG.

   These allocations represent the amount of water required to meet the water demands as a result of a rainfall deficit during a drought with the probability of recurring one year in ten. The Permittee shall not exceed these allocations in hydrologic conditions less than a 1-in-10 year drought event. Compliance with the annual allocation is based on the quantity withdrawn over a 12-month time period. Compliance with the maximum monthly allocation is based on the greatest quantity withdrawn in any single month. The annual allocation expressed in GPD or MGD is for informational purposes only.

   If the rainfall deficit is more severe than that expected to recur once every ten years, the withdrawals shall not exceed that amount necessary to continue to meet the reasonable-beneficial demands under such conditions, provided no harm to the water resources occur and:

1. All other conditions of the permit are met; and
2. The withdrawal is otherwise consistent with applicable declared Water Shortage Orders in effect pursuant to Chapter 40E-21, F.A.C.

Prior to the C-51 Phase 1 Project Being Operational, withdrawals from the Biscayne aquifer are limited to the established base condition of 127,567.5 MGY (349.5 MGD). Withdrawals from each Biscayne aquifer Wellfield are limited to those authorized in Application Number 150821-12, Special Permit Conditions 28 through 32.

When the required volume of offset water has been delivered to the Project, the allocations for each Biscayne aquifer Wellfield shall are restricted as shown on Specific Permit Conditions 38 through 49.

Withdrawals from the Upper Floridan aquifer are restricted as follows:

Total annual allocation is 4,855.00 million gallons (MG) (13.30 MGD).

Total maximum monthly allocation is 425.73 million gallons (MG).

6. Withdrawal facilities:

Groundwater - Proposed:

8 - 24" X 1200' X 2430 GPM Wells Cased To 1100 Feet
3 - 24" X 70' X 6945 GPM Wells Cased To 35 Feet

Groundwater - Existing:

2 - 24" X 100' X 7500 GPM Wells Cased To 50 Feet
3 - 48" X 88' X 7500 GPM Wells Cased To 33 Feet
1 - 18" X 65' X 1500 GPM Well Cased To 50 Feet
1 - 4" X 74' X 0 GPM Well Cased To 63.5 Feet
20 - 14" X 115' X 2500 GPM Wells Cased To 80 Feet
4 - 24" X 100' X 4900 GPM Wells Cased To 35 Feet
1 - 12" X 40' X 800 GPM Well Cased To 35 Feet
10 - 48" X 80' X 10420 GPM Wells Cased To 46 Feet
1 - 42" X 68' X 10000 GPM Well Cased To 54 Feet
1 - 6" X 30' X 400 GPM Well Cased To 25 Feet
1 - 16" X 50' X 1600 GPM Well Cased To 40 Feet
1 - 17" X 1522' X 1400 GPM Well Cased To 1090 Feet
1 - 30" X 115' X 4170 GPM Well Cased To 80 Feet
2 - 42" X 68' X 8500 GPM Wells Cased To 54 Feet

1 - 18" X 66' X 1500 GPM Well Cased To 53 Feet
1 - 17" X 1502' X 1400 GPM Well Cased To 1090 Feet
1 - 14" X 115' X 3800 GPM Well Cased To 80 Feet
1 - 30" X 1250' X 3500 GPM Well Cased To 845 Feet
1 - 24" X 70' X 3470 GPM Well Cased To 35 Feet
6 - 42" X 107' X 7000 GPM Wells Cased To 66 Feet
1 - 17" X 1501' X 1400 GPM Well Cased To 1090 Feet
7 - 16" X 100' X 4170 GPM Wells Cased To 40 Feet
2 - 24" X 70' X 6945 GPM Wells Cased To 35 Feet
1 - 17" X 1500' X 1400 GPM Well Cased To 1090 Feet
1 - 42" X 68' X 8500 GPM Well Cased To 60 Feet
1 - 30" X 1210' X 3500 GPM Well Cased To 835 Feet
4 - 40" X 100' X 10420 GPM Wells Cased To 57 Feet
1 - 18" X 55' X 1500 GPM Well Cased To 45 Feet
9 - 17" X 1490' X 1400 GPM Wells Cased To 1080 Feet
1 - 42" X 107' X 7000 GPM Well Cased To 69 Feet
2 - 12" X 40' X 1600 GPM Wells Cased To 35 Feet
4 - 24" X 108' X 8300 GPM Wells Cased To 50 Feet
4 - 24" X 104' X 6940 GPM Wells Cased To 54 Feet
1 - 15" X 1490' X 1400 GPM Well Cased To 1150 Feet
1 - 12" X 35' X 1200 GPM Well Cased To 30 Feet
1 - 48" X 80' X 10416.67 GPM Well Cased To 46 Feet
1 - 12" X 35' X 800 GPM Well Cased To 30 Feet
1 - 30" X 115' X 2500 GPM Well Cased To 80 Feet
1 - 18" X 55' X 1500 GPM Well Cased To 42 Feet
1 - 42" X 68' X 10000 GPM Well Cased To 60 Feet
1 - 18" X 50' X 500 GPM Well Cased To 40 Feet
1 - 16" X 100' X 7500 GPM Well Cased To 40 Feet
6 - 20" X 100' X 4900 GPM Wells Cased To 40 Feet
1 - 30" X 1200' X 3500 GPM Well Cased To 765 Feet
1 - 30" X 1300' X 3500 GPM Well Cased To 850 Feet
1 - 30" X 1200' X 3500 GPM Well Cased To 760 Feet

7. The Permittee shall submit all data as required by the implementation schedule for each of the permit conditions to: SFWMD at www.sfwmd.gov/ePermitting, or Regulatory Support, 3301 Gun Club Road, West Palm Beach, FL 33406.

8. The Permittee must submit the appropriate application form incorporated by reference in Rule 40E-2.101, F.A.C., to the District prior to the permit expiration date in order to continue the use of water.

9. The Permittee shall secure a well construction permit prior to construction, repair, or abandonment of all wells, as described in Chapter 40E-3, F.A.C.

10. Prior to any withdrawals at the project, the Permittee shall provide the results of the calibration testing of the identified water accounting method(s) and equip all existing and proposed withdrawal facilities with approved water use accounting method(s) pursuant to Subsection 4.1.1 of the Applicant's Handbook for Water Use Permit Applications within the South Florida Water Management District.

11. Every five years from the date of last calibration, the Permittee shall submit re-calibration data for each withdrawal facility.

12. Monthly withdrawals for each withdrawal facility shall be reported to the District quarterly. The water accounting method and means of calibration shall be stated on each report.

13. The monthly volume of water injected into and withdrawn from each Aquifer Storage and Recovery (ASR) well shall be reported to the District quarterly.

14. The Permittee shall notify the District within 30 days of any change in service area boundary that results in a change in demand that affects its permitted allocation. The allocation shall be modified to effectuate such change.

15. The Permittee shall maintain an accurate flow meter at the intake of the water treatment plant for the purpose of measuring daily inflow of water.

    Permittee shall maintain a calibrated flow meter(s) at the intake (raw water) and discharge (treated water) points within the Hialeah/Preston, Alexander Orr, and proposed Hialeah RO and South Miami Heights water treatment plants for the purpose of measuring treatment losses and shall submit monthly data quarterly as required pursuant to Special Condition 12 of Application 201117-4.

16. If at any time there is an indication that the well casing, valves, or controls leak or have become inoperative, repairs or replacement shall be made to restore the system to an operating condition. Failure to make such repairs shall be cause for filling and abandoning the well, in accordance with procedures outlined in Chapter 40E-3, F.A.C.

17. The Standard Water Conservation Plan described in Subsection 2.3.2.F.1.a of the Applicant's Handbook for Water Use Permit Applications within the South Florida Water Management District and Exhibit 26 (Application 201117-4) must continue being implemented.

    The permittee shall submit an annual report covering water conservation activities during the prior calendar year by April 30th of each year describing water conservation activities for the year including expenditures, projects undertaken and estimated water savings.

18. The Permittee shall notify the District within 30 days of entering into an inter-local agreement, contract, or other similar instrument to deliver or receive water outside of its service area or to serve a demand not identified to determine the allocation described in this permit. A copy of such

agreement shall be provided to the District. The monthly volume of water delivered and/or received via each inter-local agreement, contract, or other similar instrument shall be submitted to the District at the same reporting frequency as the withdrawals for each withdrawal facility required in this permit.

19. The Permittee shall implement the wellfield operating plan submitted in support of the permit application, as described in the District staff report.

    The wellfield operating plan is shown on Exhibit 8 of Application 201117-4.

20. The Permittee shall determine unaccounted-for distribution system losses (for the entire distribution system) on a monthly basis, including the way these losses are calculated. Reports shall be submitted to the District on a yearly basis and are due by April 30th of each year.

    If unaccounted-for distribution system losses are greater than 10 percent for any given year, the Permittee shall submit to the District for approval, a formal leak detection program that meets the requirements of Subsection 4.1.2 of the Applicant's Handbook for Water Use Permit Applications within the South Florida Water Management District, to address the reduction of such water loss.

21. The Permittee shall maintain an accurate flow meter at the point of discharge from the treatment plant for the purpose of measuring the daily flow of water.

22. The Permittee shall submit to the District an updated "Summary of Groundwater (Well) or Surface Water (Pump or Culvert) Facilities" table ("Section IV - Sources of Water", Water Use Permit Application Form 1379) at least 30 days prior to a change in any facility status (e.g. installation, relocation, abandonment) to include all specifications of the well, pump or culvert (e.g. actual total and cased depths, pump manufacturer and model numbers, pump types, intake depths and type of meters, culvert type, length, cross-section, diameter, height, width, invert elevation, control device, and water use accounting method).

23. The Permittee shall submit to the District an updated "Summary of Groundwater (Well) Facilities" table ("Section IV - Sources of Water", Water Use Permit Application Form 1379) within 90 days of completion of the proposed wells identifying the actual total and cased depths, pump manufacturer and model numbers, pump types, intake depths and type of meters.

24. If a proposed well location is different from a location specified in the application, the Permittee shall submit to the District an evaluation of the impact of pumpage from the proposed well location on adjacent existing legal uses, pollution sources, environmental features, the saline water interface, and water bodies one month prior to all new well construction. The Permittee is advised the proposed well locations and resulting impacts must be in compliance with all permitting criteria and performance standards in effect at that time.

25. Entities that control, either directly or indirectly, a wastewater treatment plant and/or reuse

distribution system, and which have determined pursuant to Section 403.064, F.S., that use of reclaimed water is feasible, must provide the District with annual updates of the following information: (A) the status of distribution system construction, including location and capacity of lines; (B) a summary of uncommitted supplies for the next year; (C) copies of any new or amended local mandatory reclaimed water reuse zone ordinances; and (D) a list of end-users who have contracted to receive reclaimed water and the agreed upon quantity of water to be delivered.

26. Prior to the initial withdrawal above the established base condition water use permitted by offset water, authorization must be granted by the District.

27. The C-51 Reservoir Project Phase 1 is not currently fully operational. For the purpose of this consumptive use permit, the District defines fully operational as the reservoir is fully constructed, all pumps are in place and operational, a District approved flow route to provide offsets to the Project is determined, all agreements with 298 districts are finalized, and water deliveries can be made to the Project and properly accounted for as offset water. In the event C-51 Reservoir, Phase 1 Project water is not available when demands exceed the Biscayne aquifer base condition, the Permittee shall modify the operating plan to utilize the Upper Floridan aquifer to meet the demands unable to be met by the C-51 Reservoir, Phase 1 Project.

28. Prior to receiving offset water from the C-51 Reservoir, Phase 1, the details of the location and configuration of the facility(s) to account for deliveries of offset water to offset additional withdrawals (beyond the base condition of 349.5 MGD) from the Biscayne aquifer Wellfields shall be submitted to the District for approval. The intent of the accounting facility is to ensure that offset water is delivered in the quantities needed and to ensure that the Permittee is obtaining the quantities of water to meet the conditions for permit issuance. Measuring flows will provide reasonable assurances that offset water deliveries are made. Using canal water level elevation data is not sufficient since the data can be influenced by many factors. Prior to the use of this facility(s), it shall be equipped with a District-approved water use accounting system and a report of calibration shall be submitted to the District prior to the delivery of offset water, pursuant to Subsection 4.1 of the AH. In addition, a report of recalibration for the facility shall be submitted to the District for this facility every five years from each previous calibration, continuing at five-year increments. This condition does not require the Permittee to construct a structure or water accounting apparatus to quantify offset deliveries of C-51 Reservoir, Phase 1 water. The use of an appropriately located existing facility is sufficient. Similarly, the calibration reports for the structure or water accounting facility can be obtained from its owner and provided by the Permittee to the District.

29. The Permittee shall record and submit monthly to the District the C-51 Reservoir, Phase 1 offset water use deliveries from the District approved facility. The water accounting method and means of calibration shall be stated on each report.

30. Withdrawals above the established Biscayne aquifer base condition water use of 11,162.16 million gallons maximum month and 127,567.5 million gallons annual (349.5 million gallons per day) are only authorized if the Permittee has received the required offset water to prevent an increase in

volume or change in timing of surface and groundwater withdrawn from the Lower East Coast Everglades Waterbodies over the base condition water use. Such withdrawals must be consistent with the operational plan described in Special Permit Condition 32 of Application 201117-4.

31. Within 30 days of execution, the Permittee shall submit an updated signed copy of any changes made to the Agreement for Capacity Allocation in Phase 1 of the C-51 Reservoir, or similar instrument, to the District.

32. On August 31, 2022 and each year thereafter, the Permittee shall provide an annual update to the District on the progress of the C-51 Reservoir Phase 1 Project. Once the C-51 Reservoir, Phase 1 becomes fully operational, as defined herein, the Permittee shall cease submitting the annual update on the progress of the C-51 Reservoir Phase 1.

33. The Permittee acknowledges that an Operating Plan for the C-51 Reservoir, Phase 1 has not been finalized. The Permittee shall comply with the final operating plan approved by the District prior to the use of offset water above the established base condition water use.

34. Pursuant to Section 373.236(4), F.S., every ten years from the date of permit issuance, the Permittee shall submit a water use compliance report for review and approval by District Staff to SFWMD at www.sfwmd.gov/ePermitting, or Regulatory Support, 3301 Gun Club Road, West Palm Beach, FL 33406.

35. The Permittee shall implement the following saline water intrusion monitoring program:

    The saline water intrusion monitoring plan is shown on Exhibit 17 of Application 201117-4. The permittee shall submit annual Monitoring Program summary reports that summarize the status of the project to update the salt front and install new monitor wells. The annual report shall be due by April 30th of each year.

36. The Permittee shall continue to submit monitoring data in accordance with the approved water level monitoring program for this project.

    Water level monitoring requirements are shown on Exhibit 11 of Application 201117-4.

37. The Permittee shall provide annual status reports to the District that summarizes the Aquifer Storage and Recovery cycle testing activities. Reports shall be submitted to the District on a yearly basis and are due by April 30th of each year.

38. The allocations for the combined Hialeah/John E. Preston/Miami Springs wellfields are:

    Annual allocation: 25,805.00 MGY
    Maximum monthly allocation: 2,257.98 MGM

39. The allocations for the Northwest Wellfield are:

Annual allocation: 24,929.5 MGY
Maximum monthly allocation: 2,181.33 MGM

40. The allocations for the Alexander Orr Wellfield are:

Annual allocation: 22,484.00 MGY
Maximum monthly allocation: 1,967.35 MGM

41. The allocations for the Snapper Creek Wellfield are:

Annual allocation: 7,336.50 MGY
Maximum monthly allocation: 641.94 MGM

42. The allocations for the Southwest Wellfield are:

Annual allocation: 52,779.00 MGY
Maximum monthly allocation: 4,618.16 MGM

43. The allocations for the West Wellfield are:

Annual allocation: 2,482.00 MGY
Maximum monthly allocation: 217.18 MGM

44. The allocations for the Elevated Tank Wellfield are:

Annual allocation: 511.00 MGY
Maximum monthly allocation: 44.71 MGM

45. The allocations for the Leisure City Wellfield are:

Annual allocation: 1,752.00 MGY
Maximum monthly allocation: 153.30 MGM

46. The allocations for the Naranja Wellfield are:

Annual allocation: 328.50 MGY
Maximum monthly allocation: 28.74 MGM

47. The allocations for the Everglades Labor Camp Wellfield are:

Annual allocation: 1,058.50 MGY

Maximum monthly allocation: 92.62 MGM

48. The allocations for the Newton Wellfield are:

    Annual allocation: 365.00 MGY
    Maximum monthly allocation: 31.94 MGM

49. The allocations for the Cluster 10 Wellfield are:

    Annual allocation: 5,475.00 MGY
    Maximum monthly allocation: 479.06 MGM

50. The Permittee is authorized to exercise the emergency wells at the Medley Wellfield for a total of two hours per month as needed for bacterial clearance and pump maintenance. Operation of the emergency wells at the Medley Wellfield for more than this amount shall require prior approval from SFWMD. Pumpage data shall be collected and reported in accordance with Special Permit Condition 12 of Application 201117-4.

51. The Permittee shall provide annual updates of the status of all alternative water supply projects. The status report shall include work completed to date, expenditures, and any anticipated changes in timelines. The Permittee shall develop alternative water supplies (including reclaimed water), at a minimum, in accordance with the schedules described in the District staff report and Exhibit 7 (Application 201117-4).

52. Within 29 months after issuance of this Permit, the Permittee shall begin implementation of an environmental monitoring program in the Bird Drive Basin and Tree Island Preserve and Park to monitor the hydrological conditions of wetlands in these areas (Exhibit 21, Application 201117-4).

    The Annual Environmental Monitoring Report shall be due April 30 of each year for the previous calendar year of monitoring.

    The monitoring locations shall consist of the following:

    - Two groundwater monitoring wells at the Bird Drive Basin completed to a depth of 20-feet, with a 5-foot screen at the bottom of the casing.

    - A cluster groundwater monitoring location consisting of three sample intervals at the Tree Island Preserve and Park. The proposed monitoring well cluster will consist of a 20 foot-deep well (shallow interval), a 40 foot-deep well (middle interval), and a 60 foot-deep well (deep interval), with a 5-foot screen at the bottom of the casings.

    - Stilling wells at each of the above three monitoring locations for gauging surface water elevations.

Groundwater and surface water levels relative to NAVD-88 datum for the above monitoring locations (Bird Drive MW-1, Bird Drive MW-2, Tree Island MW-1 [20 ft], Tree Island MW-2 [40 ft], Tree Island MW-3 [60 ft], Stilling Well 1, Stilling Well 2, and Stilling Well 3) shall be collected monthly and submitted annually as part of an Annual Environmental Monitoring Report containing hydrographs and a trend analysis of the hydrological condition of the wetlands at each location (Bird Drive Basin and Tree Island Preserve and Park). The Annual Environmental Monitoring Report shall also contain monthly pumpage data for production wells in this vicinity and an analysis provided to demonstrate that withdrawals are not causing harm to wetlands. The Annual Environmental Monitoring Report shall be due April 30 of each year for the previous calendar year of monitoring.

53. The permittee shall operate surface water control structure known as the Mid-canal structure and bridge in accordance with the approved operational plan included in Exhibit 31 of Application 201117-4. In addition, whenever this structure is opened for the purpose of raising water in the Wellfield Protection Canal down stream of the structure, the upstream structure that delivers water from the L-30 canal shall be opened in a manner to deliver equal volumes to those passed through the Mid-canal structure and bridge. The permittee shall submit operation and flow data logs regarding both structures to the District quarterly.

54. In the event that a milestone specified in the alternative water supply schedule and plan contained in Exhibit 7 of Application 201117-4 is going to be missed, the permittee shall notify the Executive Director of the District in writing explaining the nature of the delay, actions taken to bring the project back on schedule and an assessment of the impact the delay would have on the rates of withdrawals from the Everglades water bodies and associated canals as defined in SFWMD consumptive use permitting rules. The District will evaluate the situation and take actions as appropriate which could include: a.) granting an extension of time to complete the project (if the delay is minor and doesn't affect the Everglades Waterbodies or otherwise violates permit conditions), b.) take enforcement actions including consent orders and penalties, c.) modify allocations contained in this permit from the Biscayne aquifer including capping withdrawal rates until the alternative water supply project(s) are completed (in cases where the delay would result in violations of permit conditions) or d.) working with the Department of Community Affairs to limit increase demands for water until the alternative water supply project is completed.

55. The permittee may request temporary authorization from the District to capture and store stormwater via withdrawals from the permitted Biscayne aquifer production wells, for storage within the Floridan aquifer system consistent with their FDEP issued Underground Injection Control permits.The District will consider the availability of stormwater that is not otherwise needed for environmental protection or enhancement and is in no way bound to authorize such requests. All such requests shall be made in writing to the Director of Water Use Regulation.

56. If it is determined that the conditions for permit issuance are no longer met for the permit duration, the permittee shall obtain a modification of the Permit from the District as necessary to come into compliance with the conditions for permit issuance. Such conditions for permit issuance include minimum flows and levels, water reservations, and other conditions ensuring the use does not

cause water resource harm and is consistent with the objectives of the District, including implementation of the Comprehensive Everglades Restoration Plan.

57. The permittee shall operate the West Wellfield in accordance with the Memorandum of Understanding between the U.S. Department of the Interior, the Governor of the State of Florida, Miami Dade County and the District incorporated in Exhibit 31 of Application 201117-4.

STANDARD PERMIT CONDITIONS

1. All water uses authorized by this permit shall be implemented as conditioned by this permit, including any documents incorporated by reference in a permit condition. The District may revoke this permit, in whole or in part, or take enforcement action, pursuant to Section 373.136 or 373.243, F.S., unless a permit modification has been obtained to address the noncompliance.

   The Permittee shall immediately notify the District in writing of any previously submitted material information that is later discovered to be inaccurate.

2. The Permittee is advised that this permit does not relieve any person from the requirement to obtain all necessary federal, state, local and special district authorizations.

3. The Permittee shall notify the District in writing within 30 days of any sale, transfer, or conveyance of ownership or any other loss of permitted legal control of the Project and/or related facilities from which the permitted consumptive use is made. Where Permittee's control of the land subject to the permit was demonstrated through a lease, the Permittee must either submit a new or modified lease showing that it continues to have legal control or documentation showing a transfer in control of the permitted system/project to the new landowner or new lessee. All transfers of ownership are subject to the requirements of Rule 40E-1.6107, F.A.C. Alternatively, the Permittee may surrender the consumptive use permit to the District, thereby relinquishing the right to conduct any activities under the permit.

4. Nothing in this permit should be construed to limit the authority of the District to declare a water shortage and issue orders pursuant to Chapter 373, F.S. In the event of a declared water shortage, the Permittee must adhere to the water shortage restrictions, as specified by the District. The Permittee is advised that during a water shortage, reports shall be submitted as required by District rule or order. The Permittee is advised that during a water shortage, pumpage, water levels, and water quality data shall be collected and submitted as required by District orders issued pursuant to Chapter 40E-21, F.A.C.

5. This permit does not convey to the Permittee any property rights or privileges other than those specified herein, nor relieve the permittee from complying with any applicable local government, state, or federal law, rule, or ordinance.

6. With advance notice to the Permittee, District staff with proper identification shall have permission to enter, inspect, observe, collect samples, and take measurements of permitted facilities to determine compliance with the permit conditions and permitted plans and specifications. The Permittee shall either accompany District staff onto the property or make provision for access onto the property.

7. A. The Permittee may seek modification of any term of an unexpired permit. The Permittee is advised that Section 373.239, F.S., and Rule 40E-2.331, F.A.C., are applicable to permit modifications.

   B. The Permittee shall notify the District in writing 30 days prior to any changes to the project that

could potentially alter the reasonable demand reflected in the permitted allocation. Such changes include, but are not limited to, change in irrigated acreage, crop type, irrigation system, large users agreements, or water treatment method. Permittee will be required to apply for a modification of the permit for any changes in permitted allocation.

8. If any condition of the permit is violated, the permit shall be subject to review and modification, enforcement action, or revocation pursuant to Chapter 373, F.S.

9. The Permittee shall mitigate interference with existing legal uses that was caused in whole or in part by the Permittee's withdrawals, consistent with the approved mitigation plan. As necessary to offset the interference, mitigation will include pumpage reduction, replacement of the impacted individual's equipment, relocation of wells, change in withdrawal source, or other means.

   Interference to an existing legal use is defined as an impact that occurs under hydrologic conditions equal to or less severe than a 1-in-10 year drought event that results in the:

   A. Inability to withdraw water consistent with provisions of the permit, such as when remedial structural or operational actions not materially authorized by existing permits must be taken to address the interference; or

   B. Change in the quality of water pursuant to primary State Drinking Water Standards to the extent that the water can no longer be used for its authorized purpose, or such change is imminent.

10. The Permittee shall mitigate harm to the natural resources caused by the Permittee's withdrawals, as determined through reference to the conditions for permit issuance. When harm occurs, or is imminent, the District will require the Permittee to modify withdrawal rates or mitigate the harm. Harm, as determined through reference to the conditions for permit issuance includes:

    A. Reduction in ground or surface water levels that results in harmful lateral movement of the fresh water/salt water interface,

    B. Reduction in water levels that harm the hydroperiod of wetlands,

    C. Significant reduction in water levels or hydroperiod in a naturally occurring water body such as a lake or pond,

    D. Harmful movement of contaminants in violation of state water quality standards, or

    E. Harm to the natural system including damage to habitat for rare or endangered species.

11. The Permittee shall mitigate harm to existing off-site land uses caused by the Permittee's withdrawals, as determined through reference to the conditions for permit issuance. When harm occurs, or is imminent, the District will require the Permittee to modify withdrawal rates or mitigate the harm. Harm as determined through reference to the conditions for permit issuance, includes:

A. Significant reduction in water levels on the property to the extent that the designed function of the water body and related surface water management improvements are damaged, not including aesthetic values. The designed function of a water body is identified in the original permit or other governmental authorization issued for the construction of the water body. In cases where a permit was not required, the designed function shall be determined based on the purpose for the original construction of the water body (e.g. fill for construction, mining, drainage canal, etc.)

B. Damage to agriculture, including damage resulting from reduction in soil moisture resulting from consumptive use; or,

C. Land collapse or subsidence caused by reduction in water levels associated with consumptive use.

NOTICE OF RIGHTS

As required by Chapter 120, Florida Statutes, the following provides notice of the opportunities which may be available for administrative hearing pursuant to Sections 120.569 and 120.57, Florida Statutes, or judicial review pursuant to Section 120.68, Florida Statutes, when the substantial interests of a party are determined by an agency. Please note that this Notice of Rights is not intended to provide legal advice. Some of the legal proceedings detailed below may not be applicable or appropriate for your situation. You may wish to consult an attorney regarding your legal rights.

RIGHT TO REQUEST ADMINISTRATIVE HEARING

A person whose substantial interests are or may be affected by the South Florida Water Management District's (District) action has the right to request an administrative hearing on that action pursuant to Sections 120.569 and 120.57, Florida Statutes. Persons seeking a hearing on a District decision which affects or may affect their substantial interests shall file a petition for hearing in accordance with the filing instructions set forth herein within 21 days of receipt of written notice of the decision unless one of the following shorter time periods apply: (1) within 14 days of the notice of consolidated intent to grant or deny concurrently reviewed applications for environmental resource permits and use of sovereign submerged lands pursuant to Section 373.427, Florida Statutes; or (2) within 14 days of service of an Administrative Order pursuant to Section 373.119(1), Florida Statutes. "Receipt of written notice of agency decision" means receipt of written notice through mail, electronic mail, posting, or publication that the District has taken or intends to take final agency action. Any person who receives written notice of a District decision and fails to file a written request for hearing within the timeframe described above waives the right to request a hearing on that decision.

If the District takes final agency action that materially differs from the noticed intended agency decision, persons who may be substantially affected shall, unless otherwise provided by law, have an additional point of entry pursuant to Rule 28-106.111, Florida Administrative Code.

Any person to whom an emergency order is directed pursuant to Section 373.119(2), Florida Statutes, shall comply therewith immediately, but on petition to the board shall be afforded a hearing as soon as possible.

A person may file a request for an extension of time for filing a petition. The District may grant the request for good cause. Requests for extension of time must be filed with the District prior to the deadline for filing a petition for hearing. Such requests for extension shall contain a certificate that the moving party has consulted with all other parties concerning the extension and whether the District and any other parties agree to or oppose the extension. A timely request for an extension of time shall toll the running of the time period for filing a petition until the request is acted upon.

FILING INSTRUCTIONS

A petition for administrative hearing must be filed with the Office of the District Clerk. Filings with the Office of the District Clerk may be made by mail, hand-delivery, or e-mail. Filings by facsimile will not be accepted. A petition for administrative hearing or other document is deemed filed upon receipt during normal business hours by the Office of the District Clerk at the District's headquarters in West Palm Beach, Florida. The District's normal business hours are 8:00 a.m. – 5:00 p.m., excluding weekends and District holidays. Any document received by the Office of the District Clerk after 5:00 p.m. shall be deemed filed as of 8:00 a.m. on the next regular business day. Additional filing instructions are as follows:

- Filings by mail must be addressed to the Office of the District Clerk, 3301 Gun Club Road, West Palm Beach, Florida 33406.

- Filings by hand-delivery must be delivered to the Office of the District Clerk. Delivery of a petition to the District's security desk does not constitute filing. It will be necessary to request that the District's security officer contact the Office of the District Clerk. An employee of the District's Clerk's office will receive and process the petition.
- Filings by e-mail must be transmitted to the Office of the District Clerk at clerk@sfwmd.gov. The filing date for a document transmitted by electronic mail shall be the date the Office of the District Clerk receives the complete document.

INITIATION OF AN ADMINISTRATIVE HEARING

Pursuant to Sections 120.54(5)(b)4. and 120.569(2)(c), Florida Statutes, and Rules 28-106.201 and 28-106.301, Florida Administrative Code, initiation of an administrative hearing shall be made by written petition to the District in legible form and on 8 1/2 by 11 inch white paper. All petitions shall contain:

1. Identification of the action being contested, including the permit number, application number, District file number or any other District identification number, if known.
2. The name, address, any email address, any facsimile number, and telephone number of the petitioner, petitioner's attorney or qualified representative, if any.
3. An explanation of how the petitioner's substantial interests will be affected by the agency determination.
4. A statement of when and how the petitioner received notice of the District's decision.
5. A statement of all disputed issues of material fact. If there are none, the petition must so indicate.
6. A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the District's proposed action.
7. A statement of the specific rules or statutes the petitioner contends require reversal or modification of the District's proposed action.
8. If disputed issues of material fact exist, the statement must also include an explanation of how the alleged facts relate to the specific rules or statutes.
9. A statement of the relief sought by the petitioner, stating precisely the action the petitioner wishes the District to take with respect to the District's proposed action.

MEDIATION

The procedures for pursuing mediation are set forth in Section 120.573, Florida Statutes, and Rules 28-106.111 and 28-106.401–.405, Florida Administrative Code. The District is not proposing mediation for this agency action under Section 120.573, Florida Statutes, at this time.

RIGHT TO SEEK JUDICIAL REVIEW

Pursuant to Section 120.68, Florida Statutes, and in accordance with Florida Rule of Appellate Procedure 9.110, a party who is adversely affected by final District action may seek judicial review of the District's final decision by filing a notice of appeal with the Office of the District Clerk in accordance with the filing instructions set forth herein within 30 days of rendition of the order to be reviewed, and by filing a copy of the notice with the appropriate district court of appeals via the Florida Courts E-Filing Portal.

WATER USE STAFF REPORT

Application Number: 201117-4

Permit Number: 13-00017-W

Project Name: MIAMI-DADE CONSOLIDATED P W S

Water Use Permit Status: MODIFICATION/RENEWAL

Location: MIAMI-DADE COUNTY,
S-/T53S/R40E
S-/T53S/R39E
S-/T53S/R41E
S-/T54S/R39E
S-/T54S/R40E
S-/T54S/R41E
S-/T54S/R42E
S-/T55S/R39E
S-/T55S/R40E
S-/T56S/R38E
S-/T56S/R39E
S-/T57S/R38E
S-/T57S/R39E
S-/T57S/R40E

Applicant's Name and Address: MIAMI-DADE WATER AND SEWER DEPARTMENT
3071 S W 38TH AVENUE
MIAMI, FL 33146

Water Use Classification: Public Water Supply
Aquifer Storage And Recovery

Sources:

Groundwater from: Biscayne Aquifer
Upper Floridan Aquifer

Authorized Allocation:

Annual Allocation:	148,018	Million Gallons (MG)
Maximum Monthly Allocation:	12,951.51	Million Gallons (MG)

Existing Withdrawal Facilities - Groundwater

Source: Biscayne Aquifer
1 - 30" X 115' X 4170 GPM Well Cased to 80 Feet
2 - 42" X 68' X 8500 GPM Wells Cased to 54 Feet
1 - 30" X 115' X 2500 GPM Well Cased to 80 Feet
2 - 24" X 70' X 6945 GPM Wells Cased to 35 Feet
1 - 18" X 66' X 1500 GPM Well Cased to 53 Feet

Existing Withdrawal Facilities - Groundwater

Source: Biscayne Aquifer
7 - 16" X 100' X 4170 GPM Wells Cased to 40 Feet
1 - 42" X 68' X 8500 GPM Well Cased to 60 Feet
1 - 16" X 100' X 7500 GPM Well Cased to 40 Feet
1 - 14" X 115' X 3800 GPM Well Cased to 80 Feet
1 - 16" X 50' X 1600 GPM Well Cased to 40 Feet
1 - 6" X 30' X 400 GPM Well Cased to 25 Feet
1 - 24" X 70' X 3470 GPM Well Cased to 35 Feet
1 - 18" X 55' X 1500 GPM Well Cased to 42 Feet
6 - 42" X 107' X 7000 GPM Wells Cased to 66 Feet
4 - 24" X 108' X 8300 GPM Wells Cased to 50 Feet
1 - 12" X 40' X 800 GPM Well Cased to 35 Feet
4 - 24" X 104' X 6940 GPM Wells Cased to 54 Feet
1 - 18" X 65' X 1500 GPM Well Cased to 50 Feet
1 - 18" X 50' X 500 GPM Well Cased to 40 Feet
3 - 48" X 88' X 7500 GPM Wells Cased to 33 Feet
1 - 4" X 74' X 0 GPM Well Cased to 63.5 Feet
6 - 20" X 100' X 4900 GPM Wells Cased to 40 Feet
2 - 24" X 100' X 7500 GPM Wells Cased to 50 Feet
1 - 12" X 35' X 1200 GPM Well Cased to 30 Feet
1 - 42" X 68' X 10000 GPM Well Cased to 54 Feet
10 - 48" X 80' X 10420 GPM Wells Cased to 46 Feet
4 - 24" X 100' X 4900 GPM Wells Cased to 35 Feet
1 - 48" X 80' X 10416.67 GPM Well Cased to 46 Feet
2 - 12" X 40' X 1600 GPM Wells Cased to 35 Feet
1 - 42" X 107' X 7000 GPM Well Cased to 69 Feet
20 - 14" X 115' X 2500 GPM Wells Cased to 80 Feet
4 - 40" X 100' X 10420 GPM Wells Cased to 57 Feet
1 - 18" X 55' X 1500 GPM Well Cased to 45 Feet
1 - 42" X 68' X 10000 GPM Well Cased to 60 Feet
1 - 12" X 35' X 800 GPM Well Cased to 30 Feet
Source: Upper Floridan Aquifer
1 - 17" X 1502' X 1400 GPM Well Cased to 1090 Feet
1 - 17" X 1522' X 1400 GPM Well Cased to 1090 Feet
1 - 30" X 1200' X 3500 GPM Well Cased to 765 Feet
1 - 30" X 1210' X 3500 GPM Well Cased to 835 Feet
1 - 15" X 1490' X 1400 GPM Well Cased to 1150 Feet
1 - 30" X 1250' X 3500 GPM Well Cased to 845 Feet
1 - 30" X 1300' X 3500 GPM Well Cased to 850 Feet
1 - 30" X 1200' X 3500 GPM Well Cased to 760 Feet
1 - 17" X 1501' X 1400 GPM Well Cased to 1090 Feet
1 - 17" X 1500' X 1400 GPM Well Cased to 1090 Feet
9 - 17" X 1490' X 1400 GPM Wells Cased to 1080 Feet

Proposed Withdrawal Facilities - Groundwater

Proposed Withdrawal Facilities - Groundwater

Source: Biscayne Aquifer
3 - 24" X 70' X 6945 GPM Wells Cased to 35 Feet
Source: Upper Floridan Aquifer
8 - 24" X 1200' X 2430 GPM Wells Cased to 1100 Feet

Rated Capacity Source	Status Code	GPM	MGM	MGY
Biscayne Aquifer	E	527,277	23,082.1	277,137
Upper Floridan Aquifer	E	37,100	1,624.1	19,500
Biscayne Aquifer	P	20,835	912.1	10,951
Upper Floridan Aquifer	P	19,440	851.0	10,218
Totals:		**604,652**	**26,469.3**	**317,806**

PURPOSE

The purpose of this application is to renew and modify Water Use Permit 13-00017-W for public water supply use. Withdrawals are from the Biscayne aquifer and the Upper Floridan aquifer (UFA).

PROJECT DESCRIPTION

Miami-Dade Water and Sewer Department (MDWASD) is an existing public water supply utility located in Miami-Dade County as shown on Exhibit 1. The utility provides potable water and wastewater services within its service area. The utility serves 2.3 million customers (as of 2019) and the utility service area comprises most of Miami-Dade County.

MDWASD's service area is depicted on Exhibit 2. MDWASD is permitted to provide potable water from 17 wellfields (Exhibit 3) to a projected population of 2,642,929 persons in the year 2041. Withdrawals are from the Biscayne aquifer via 96 existing and 3 proposed withdrawal facilities and from the UFA via 19 existing withdrawal facilities and 8 proposed withdrawal facilities. In addition, there are five existing aquifer storage and recovery (ASR) facilities. Individual wellfield layouts are shown on Exhibit 3 and well specifications on Exhibit 4.

The overall Project is divided into North, Central, and South systems with some interconnection between them at the treated water distribution level (Exhibit 2 and Exhibit 3).

Modifications requested by MDWASD include an increase of the established base condition water use of 349.5 million gallons per day (MGD) from the Biscayne aquifer. The withdrawals from the Biscayne aquifer above the base condition will be offset through wellfield optimization based on groundwater modeling and the use of water from the Palm Beach Aggregates, C-51 Reservoir, Phase 1 Project (C-51 Reservoir, Phase 1), consistent with Subsection 3.2.1.E.6.c of the Applicant's Handbook for Water Use Permit Applications within the South Florida Water Management District (AH). This modification also includes the construction of a new 15 MGD wellfield (referred to as

the Cluster 10 Wellfield) which is located away from Regional Waterbodies. The increase in withdrawals is requested to meet future MDWASD potable water supply demands through year 2040.

Palm Beach Aggregates, C-51 Reservoir, Phase 1:
The C-51 Reservoir, Phase 1 is a diversion and impoundment permitted by the Florida Department of Environmental Protection (DEP) Permit No. EI 50-301070-003. The C-51 Reservoir, Phase 1 will capture and store excess water from the District's C-51 Canal that will be discharged back into regional conveyance systems to provide offsets for potential impacts to Lower East Coast Waterbodies by C-51 Reservoir, Phase 1 participants, consistent with the District's Lower East Coast Regional Water Availability Rule. The C-51 Reservoir, Phase 1 is the proposed alternative water supply source for the Project.

On March 6, 2020, MDWASD submitted a letter of intent to the South Florida Water Management District (District) indicating its intention to participate in the C-51 Reservoir project, and an agreement was executed in July 2020 between Miami-Dade County and Palm Beach Aggregates Inc. for a 15 MGD allocation. The overall C-51 flow route is depicted on Exhibit 5 and the Miami-Dade County area flow route shown on Exhibit 6. The executed agreement can be found in the permit file (Application 201117-4) for the executed Agreement.

In addition to participation in C-51, MDWASD intends to optimize wellfield operations to maximize use of wet and dry season non-regional flows throughout Miami-Dade County by leveraging operational flexibility between MDWASD's water treatment plants and wellfields. By 2040, MDWASD projects a population served of 2,912,830. The average day and peak raw water demands in the year 2040 are estimated at 405.53 MGD and 425.81 MGD, respectively. This amounts to a total annual allocation of 148,018 million gallons (MG). Demand projections assume that the cumulative water conservation credit by 2040 will be 2.86 MGD resulting in an adjusted finished annual water demand of 135.99 gallons per capita per day (gpcd).

Exhibit 7 contains milestones and dates for implementing the C-51 Reservoir, Phase 1. According to this exhibit, the C-51 Reservoir, Phase 1 is scheduled to be fully operational in October 31, 2022. For the purpose of this consumptive use permit, the District defines fully operational as the reservoir is fully constructed, all pumps are in place and operational, a District approved flow route to provide offsets to the Project is determined, all agreements with 298 districts are finalized, and water deliveries can be made to the Project and properly accounted for as offset water. Exhibit 7 also contains milestones for an alternative water supply project (AWS) project in case there are delays or other issues with completing the C-51 Reservoir, Phase 1.

Wellfield Operating Plan:
Optimization modeling performed for this Permit resulted in specific limits on welfield withdrawals for wet and dry seasons. These limits are shown on Exhibit 8.

PROJECT DESCRIPTION (CONTINUED)

Permit History:

North Miami-Dade:

The District issued the first water use permit for the Hialeah-Preston water treatment plants (WTPs) (Water Use Permit 13-00018-W) on February 7, 1975, with an annual allocation of 38.74 billion gallons per year (BGY) (106.14 MGD) from the Miami Springs, Medley, Hialeah and Preston Wellfields. This permit (Water Use Permit 13-00018-W) was reissued on February 12, 1981 for a ten-year period and an annual allocation of 45.62 BGY (124.97 MGD).

The first water use permit for the Northwest Wellfield (Water Use Permit 13-00037-W) was issued on September 4, 1975 for an annual allocation of 18.15 BGY (50 MGD). The Northwest Wellfield Water Use Permit 13-00037-W with an annual allocation of 60.23 BGY (165 MGD) was modified and issued on March 12, 1987.

The Hialeah-Preston and Northwest welfield permits were combined into one master permit (Water Use Permit 13-00037-W) on March 14, 1991. The permit authorized a withdrawal of 60.20 BGY, an average daily withdrawal of 164.93 MGD, and a maximum daily withdrawal of 197.91 MGD. In February 1999, the permit was reissued for an annual allocation of 72,703 MG (72.7 BGY) and a maximum day allocation of 235.04 MGD. The permit included a maximum pumpage from the Northwest Wellfield of 155 MGD, and 70 MGD from the Hialeah, Preston, and Miami Springs Wellfields, and the remainder (but not limited to) 10 MGD from the ASR wells. The permitted wellfields included 45 Biscayne aquifer production wells located in the Hialeah, Preston, Miami Springs, and Northwest Wellfields. An application to modify the permit was received on January 8, 2001. The permit expiration date was February 11, 2004.

Central Miami-Dade:

The District issued the first water use permit for Alexander Orr, Southwest, and Snapper Creek wellfields (Water Use Permit 13-00017-W) on February 7, 1975, with an annual allocation of 30.66 BGY (84 MGD). On September 4, 1975, the annual allocation was increased to 34.31 BGY (94 MGD). The permit was renewed on December 13, 1979, with an annual allocation of 47.45 BGY (130 MGD) and included the allocations and service areas previously associated with Water Use Permits 13-00028-W, (Florida Water & Utilities), 13-00058-W (General Water Works), and 13-00067-W (South Miami Heights). On April 10, 1986, the permit was renewed with an annual allocation of 60.408 BGY (165.5 MGD), and a maximum day allocation of 198.2 MG. The permit was renewed again on November 10, 1993, with an annual allocation of 66.231 BGY (181.45 MGD) from the Alexander Orr, Southwest, Snapper Creek and West Wellfield (WWF). In May 1995, Water Use Permit 13-00017-W was issued for the Alexander-Orr WTP with an annual allocation of 74,136 MG (203.11 MGD), and a maximum day allocation of 241.60 MGD, of which 23.96 MGD are allocated to ASR. The permit expiration date was May 11, 2004, and an application to renew and modify the permit was received on the expiration date.

PROJECT DESCRIPTION (CONTINUED)

South Miami-Dade:

Water Use Permit 13-00040-W was initially issued to Rex Utilities, Inc. on March 18, 1976, with an annual allocation of 4.15 BGY (11.4 MGD) and a maximum day of 14.8 MGD. Subsequently, MDWASD acquired the facilities that are now known as the South Miami-Dade Water Supply System. The original permit was modified and renewed on July 8, 1982, with an allocation of 3.76 BGY (10.61 MGD) and a maximum day of 15.9 MGD for the six wellfields. The permit expired on July 8, 1992 and was reissued to MDWASD on July 14, 1994, with an annual allocation of 3.873 BGY (10.61 MGD) and a maximum day of 15.92 MGD. On July 11, 1998, the permit was renewed again with an annual allocation of 3.902 BGY (10.69 MGD) and a maximum day of 13.58 MGD. On March 13, 2003, the District re-issued permit number 13-00040-W with an annual allocation of 3.997 BGY (10.95 MGD), and a maximum daily allocation of 13.4 MGD and authorization to install 4 new wellfields to supply water to a new membrane softening WTP. The permit expiration date was March 13, 2008.

Consolidated Permit:

On November 15, 2007, Water Use Permit 13-00017-W was renewed and consolidated all facilities and demands of Water Use Permits 13-00017-W, 13-00037-W, and 13-00040-W into one permit. It was issued with a duration of 20 years, an annual allocation of 152,741 MGY (418.47 MGD) and a maximum month allocation of 13,364 million gallons (MGM). Along with the existing wellfields and the proposed South Dade wellfield, a new UFA wellfield and reverse-osmosis (RO) plant were proposed in Hialeah. The Biscayne aquifer base condition was established at 347 MGD, pursuant to Subsection 3.2.1.E of the (AH). Additional groundwater modeling conducted during the permit review showed that an additional 5.0 MGD (1.5 MGD at Snapper Creek, 1.5 MGD at Southwest, 0.5 MGD at Newton, and 1.5 MGD at Everglades wellfields) would not cause a net increase in volume or cause a change in timing of surface and groundwater from Everglades water bodies. Groundwater and canal recharge projects were required to offset proposed increased Biscayne aquifer withdrawals beyond the calculated base condition limit of 347 MGD.

On November 1, 2010, the consolidated permit (13-00017-W) was modified (to remove proposed UFA blending wells and re-start the existing ASR wells) and renewed for a 20 year duration, with an annual allocation of 149,106 MGY (408.51 MGD) and a maximum month allocation of 13,047 MGM to provide potable water to a projected population of 2,787,451 persons in the year 2030.

On July 16, 2012, the permit was modified to add UFA facilities and allocation, modify the calculated base condition from 347 MGD to 349.5 MGD, reduce the total allocation from the Biscayne aquifer and modify the source limits from the Alexander Orr and Southwest wellfields. There were no changes to the demand projections or permit duration.

On February 9, 2015, the permit was modified. Modifications included a reduction of the Biscayne aquifer allocation by 16.36 MGD, from 365.86 MGD to 349.5 MGD. As a

PROJECT DESCRIPTION (CONTINUED)

result, the West District Water Reclamation Plant (WRP) Canal Recharge projects (Projects 6 and 7 shown on Exhibit 14 from the previous permit issued in 2012, Application 110511-6) were no longer required to offset proposed Biscayne aquifer withdrawals beyond the established base condition of 349.5 MGD, as well as a Decrease in the UFA allocation of 10.03 MGD, from 46.6 MGD to 36.57 MGD due to decreased projected demands. Revised the reuse requirement (Limiting Condition 39 of the 2012 permit) to reduce the minimum volume of reuse projects (as set forth in Projects 1 through 8 of Exhibit 14 of the 2012 permit) from 170 MGD to 117.5 MGD, which met the minimum requirement of the ocean outfall legislation at that time. Removed from the permit a requirement to provide 37 MGD of advanced treated reclaimed water to recharge the Alexander Orr WTP Wellfields (Projects 5 and 6 from Exhibit 14 of the 2012 permit) Finally, this permit modification included removing a requirement to provide 7 MGD of reclaimed water from the North District wastewater treatment plant (WWTP) (Project 7 from Exhibit 14 of the 2012 permit).

PROJECTED WATER USE DEMANDS

The Permittee estimates a 2040 population of 2,912,830 persons with a finished water per capita use rate of 137.9 gpcd. The per capita use rate was calculated from a three year average for 2017 through 2019 (Exhibit 9). The raw water per capita (139.86 gpcd) is higher due to treatment losses. The maximum month peaking ratio (1.05:1) was calculated by dividing the peak raw water monthly rate by the average raw water monthly rate for the three year time period of 2017 through 2019.

Staff recommends an annual allocation of 148,018 MGY (405.55 MGD) through the year 2040. Staff further recommends a maximum month allocation of 12,951.61 MG based on a maximum month to average month ratio of 1.05:1. See Exhibit 9 for projected demand tables and Exhibit 10 for a step chart of finished demands.

IMPACT EVALUATION

The Miami-Dade Urban Hydrologic Model (UMD Model) developed for Miami-Dade County water supply planning United States Geological Survey (USGS), 2014, was applied for this permit application. The model was found to be well-calibrated by USGS technical reviewers and external MDWASD Peer-Review (Maliva et al, 2018). The UMD Model is a coupled surface water/groundwater flow model that was developed with the specific objective of evaluating the effects of groundwater pumpage and increased sea-level rise on canal leakage and regional groundwater flow in the Miami-Dade County area.

The model simulations were run consistent with Subsection 3.1.2 of the AH basic requirements for modeling evaluation periods. The model impact period ran from November 2008 to October 2009, with 2009 being the driest overall year in the 15-year simulation period. Hence, the period between November 2008 to October 2009 from the impact evaluation meets the intent of the requirement of a year of drought conditions preceded (May 2008 to October 2008) and followed (November 2009 to

IMPACT EVALUATION (CONTINUED)

April 2010) by periods of normal rainfall. The C-51 Reservoir, Phase I project is a regional alternative water supply that will add to water supplies in South Florida. This Project will serve as an alternative water supply with the storage and redistribution of regional stormwater that is otherwise discharged to the tide. Water will be routed via coordinated operation of the primary canal system to individual utility wellfields to provide aquifer recharge that offsets withdrawals from the Biscayne aquifer.

MDWASD has entered into a 15 MGD agreement with the C-51 Reservoir, Phase 1 Project which will allow MDWASD to expand use of the Biscayne aquifer in full accordance with the Regional Water Availability Rule. Consistent with Subsection 3.2.1.E of the AH, MDWASD's historic Biscayne aquifer base condition water use was 349.5 MGD. The proposed Biscayne aquifer raw-water withdrawal for Year-2040 represents a total of 392.2 MGD. MDWASD groundwater pumpage is constrained by a requirement to maintain the same or less demand from the canal regional flows, while not increasing natural groundwater seepage from Water Conservation Area 3-B (WCA-3B) and Everglades National Park (ENP), as established by the base condition.

A simulation-optimization approach was developed to identify preferred allocations to increase Biscayne aquifer withdrawals without inducing additional seepage from the Regional Waterbodies. This optimization approach was then used to propose a new wellfield cluster (Cluster 10) in Central Miami-Dade County, as well as the best allocation of existing wellfields. The objective function was formulated to minimize impacts of the natural groundwater seepage from WCA-3B and ENP into the urban and agricultural areas, not exceeding the Base Condition value and limiting canal regional flow.

WATER RESOURCE IMPACT EVALUATION

Water Resource Availability

Biscayne Aquifer

There are two major aquifer systems in Miami-Dade County, as discussed in the USGS Water Resource Investigations Report (WRIR) 90-4108. Overlying the FAS in Miami-Dade County is a 550- to 800-feet thick sequence consisting of sediments having relatively low permeability, referred to as the intermediate confining unit. Overlying the intermediate confining unit is the surficial aquifer system, the source of freshwater supplies for Miami-Dade County and for most of southeast Florida. The surficial aquifer system base is -180 to -220 feet National Geodetic Vertical Datum (NGVD) and includes the Biscayne aquifer and the gray limestone aquifer. The base of the Biscayne aquifer is 80 to 100 feet below land surface (bls) at all the Miami-Dade public water supply wellfields except the Hialeah/Preston, Miami Springs and Medley wellfields, where the aquifer base is 130 to 150 feet bls.

Land surface elevations in Miami-Dade County average 5 to 10 feet NGVD, with coastal dune remnants reaching 15 to 20 feet NGVD. The approximate dry season

depths to water at the wellfields are as follows:

Northwest: 6 feet (-1 foot NGVD)
Preston: 14 feet (-5 feet NGVD)
Miami Springs: 7 feet (-1 foot NGVD)
West: 3 feet (3 feet NGVD)
Southwest: 13 feet (-4 feet NGVD)
Snapper Creek: 9 feet (-4 feet NGVD)
Alexander Orr: 14.5 feet (-6.5 feet NGVD)
Naranja: 4 feet (2 feet NGVD)
Newton: 4.5 feet (1.5 feet NGVD)
Everglades: 3 feet (2 feet NGVD)
Leisure City: 4 feet (2 feet NGVD)
Elevated Tank: 6 feet (3 feet NGVD)
Cluster 10: 7 feet (4.5 feet NGVD)

The water levels are based on monitor well data for the north wellfields and from results of modeling data in 2040 at the Cluster 10, Southwest, Alexander Orr and South system wellfields. In the dry season, approximately 86 feet of the Biscayne aquifer would remain saturated.

Sources of recharge to the surficial aquifer system in Miami-Dade County are: (1) infiltration of rainfall or irrigation water; (2) infiltration of surface water and groundwater imported from the water-conservation areas/Everglades National Park; (3) infiltration of urban runoff by way of drains, wells, or ponds; and (4) groundwater inflow from southwestern Broward County. Recharge by rainfall is greatest during the wet season, from June to November, and recharge by canal seepage is greatest during the dry season, from December to May. Water level data is collected from an extensive USGS monitor network (see Exhibits 11 and 12). These data indicate that groundwater flows from western Miami-Dade County towards the coast and fluctuates approximately two feet from wet to dry season.

Modeling indicates that approximately 1 foot of additional drawdown could occur in the immediate vicinity of the Alexander-Orr and Southwest Wellfields, and approximately 0.5 feet of additional drawdown could occur in the immediate vicinity of the Cluster 10 and Miami Springs (Lower) Wellfields (Exhibit 13).

The Preston, Medley, and Miami Springs wellfields are adjacent to the C-6 Canal upstream of the S-26 structure, which is operated to maintain a headwater elevation of 2.5 feet NGVD. The Alexander Orr and Snapper Creek wellfields are adjacent to the C-2 Canal upstream of the S-22 structure, which is operated to maintain a headwater elevation of 2.9 feet NGVD. The two South Miami Heights (SMH) proposed wellfields are in the vicinity of the C-1W and C-1N canals upstream of the S-21 structure, which is operated to maintain a headwater elevation of 2.0 feet NGVD in the dry season and 2.4 feet NGVD in the wet season. Monitor wells have been installed to

observe the impact of new or increased pumpage near these regional canals. See Exhibit 12 for location maps and a table of well information.

Based on historic water level data for existing wellfields and model results for proposed withdrawals, the potential for harm to occur to the water resource availability of the Biscayne aquifer as a result of withdrawal of the recommended allocation is considered minimal.

Upper Floridan Aquifer

The deeper aquifer system in Miami-Dade County is commonly known as the FAS and it is present in all of Florida and parts of adjacent states. USGS WRIR 94-4010 is a study of the FAS in southeastern Florida. In Miami-Dade County, the top of the FAS occurs at about -950 to -1,000 feet NGVD. The FAS is divided into three general hydrogeologic units: (1) the Upper Floridan aquifer, which contains brackish groundwater, (2) the Middle confining unit, which contains saline groundwater, and (3) the Lower Floridan aquifer, which contains groundwater closely resembling seawater. The Upper Floridan aquifer, where Miami-Dade's ASR and RO wells are completed, is generally 500 to 600 feet thick, and its transmissivity has been measured to be as high as 31,000 square feet per day (ft2/d).

In southern Florida, the FAS is a confined aquifer with potentiometric head elevations of 30 to 50 feet NGVD in Miami-Dade County. There are no current water level maps of the upper Floridan aquifer available to determine actual water levels at the Permittee's facilities. Special Conditions 36 and 37 require water level and chloride monitoring of one standby well at each of the upper Floridan aquifer wellfields in this permit. See Exhibit 13 for a map and table of FAS wells monitored by MDWASD. Modeling was conducted for impact assessment purposes for the previous permit. Model results predicted maximum drawdowns of 65 feet at the Hialeah RO wellfield when pumping 13.33 MGD. Model results for the SMH RO Wellfield predict drawdowns of 40 to 50 feet in the vicinity of the wellfield at a maximum withdrawal rate of 24 MGD for 90 days and no recharge. Additional details regarding the UFA modeling can be found in the permit file (Application 140627-12).

Water levels in the upper Floridan aquifer will remain approximately 970 feet above the top of the aquifer at the location of maximum drawdown. Based on model results, the potential for harm to occur to the water resource availability of the aquifer as a result of the withdrawal of the recommended allocation is considered minimal.

Existing Legal Users

Biscayne Aquifer

Modeling performed for the previous permit demonstrated that the proposed withdrawals from the various Biscayne aquifer wellfields would not cause harm to existing legal users. Optimization modeling and C-51 Reservoir, Phase 1 offset water enabled an increase in the base condition allocation of some of the wellfields.

Increases to the withdrawals at the Southwest Wellfield from 109 MGD to 144.6 MGD, and the Alexander Orr Wellfield from 40 MGD to 61.6 MGD, resulted from the optimization process. The optimization modeling predicts that approximately 0.5 feet of additional drawdown will occur in the immediate vicinity of the Hialeah-Preston and Cluster 10 Wellfields, and about 1 foot of additional drawdown in the immediate vicinity of the Alexander-Orr and Southwest Wellfields. Exhibit 14 shows changes in drawdown from previous to modified base conditions for each wellfield.

Based on observation of historical water level data and groundwater modeling results, the withdrawals from the Biscayne aquifer are not anticipated to result in the inability of an existing legal user to withdraw water, change the quality of the water to the extent that it can no longer be used for its authorized purpose, or prevent an existing legal user from meeting its permitted demands without exceeding the permitted allocation. Therefore, the potential for harm to occur to the existing legal users of the Biscayne aquifer as a result of the withdrawal of the recommended allocation is considered minimal.

Upper Floridan Aquifer

Hialeah RO wellfield:
The existing legal users of the Upper Floridan aquifer in Miami-Dade County and southern Broward County are shown and listed on Exhibit 15.

The nearest permitted user to the Hialeah Floridan aquifer wells is the City of Miramar, whose closest well is approximately three miles from the northernmost Hialeah RO wellfield well (see Exhibit 12 for location). Model results predict the proposed withdrawals will result in an additional decline in water level of less than 20 feet at the nearest Miramar well, which would result in water levels at or above land surface and approximately 1,000 remaining feet of available drawdown. Monitoring of RO-1 indicates chlorides are currently about 3,440 milligrams per liter (mg/L) in this well.

SMH RO wellfield:
The nearest existing legal users to the SMH Wellfield are the Florida Keys Aqueduct Authrority (FKAA) (Water Use Permit 13-0005-W) and FPL Turkey Point Power Plant. Results of the model run simulating SMH only with a continuous withdrawal for 90 days at 24 MGD were analyzed within the 1 foot drawdown contour. This simulation represents the cone of depression in the Upper Floridan aquifer due to pumping of only the South Miami Heights wellfield. The MDWASD ASR facility at the Southwest Wwellfield lies just inside the 1 foot drawdown contour, while the MDWASD West Wellfield ASR facility, FPL, FKAA (and Atlantic Saphire) lie outside the 1 foot drawdown contour. Drawdown is predicted to be 0.58 foot for the WWF ASR site, 1.28 feet for SWWF ASR site, 0.54 foot for FPL, and 0.21 foot for FKAA.

In addition, results were analyzed for the continuous withdrawal for 90 days of SMH at 24 MGD and existing legal users at their permitted allocation. Drawdowns were

predicted of 0.63 foot at WWF, 1.36 feet at SWWF, 44.63 feet at FPL, and at 12.39 feet at FKAA.

The predicted impact on existing users, based on model results, is considered by staff to be minimal. Therefore, the proposed use of the upper Floridan aquifer is not anticipated to result in the inability of an existing legal user to withdraw water, change the quality of the water to the extent that it can no longer be used for its authorized purpose, or prevent an existing legal user from meeting its permitted demands without exceeding the permitted allocation.

Existing Off Site Land Uses

Biscayne Aquifer

Land uses that are dependent upon water being on or near land surface and that existed prior to this application are protected from harm. The surrounding land uses at each of the wellfields are as follows:

North System Wellfields:
Preston - residential north, east and west, industrial/commercial south
Miami Springs Upper - in residential neighborhood with schools and parks
Miami Springs Lower - on golf course with residential on all sides
Northwest - rock mining to north, south and east, undeveloped to west

Central System Wellfields:
Alexander Orr - residential to east and west, commercial to south, WTP to north
Snapper Creek - residential to east, west and south, commercial to north
Southwest - residential on all sides, commercial to south, rural residential/agricultural to north
West - agricultural to east, south and west, undeveloped to north

South System Wellfields:
Everglades Labor Camp - residential to east and south, agricultural to north and west
Newton - residential on all sides
Former Plant - residential on all sides and commercial to south
Cluster 10 - residential and agricultural on all sides

Existing Wellfields with increases in withdrawals resulting from the optimization modeling include,

Alexander-Orr (40 MGD to 61.6 MGD)
Southwest (109 MGD to 144.6 MGD)
Miami Springs Lower (13.4 MGD to 18.05 MGD)
John E. Preston (37.2 MGD to 40.18 MGD)
Leisure City (1.6 MGD to 4.8 MGD)

The rest of the Wellfields remain at approximately the same or reduced withdrawal

rates.

Model results show that an additional 1 foot of drawdown in the immediate vicinity of the Alexander-Orr and Southwest Wellfields, and about 0.5 feet of additional drawdown in the immediate vicinity of the Miami-Sprongs (Lower) and Preston Wellfields, and about 0.2 feet of additional drawdown at the Leisure City Wellfield (Exhibit 14).

Model results in the area of the proposed Cluster 10 wellfield predict less than 0.1 foot of drawdown at the nearest lakes to the east and west, respectively.

Pursuant to Subsection 3.6.2 of the AH, the use is not expected to result in significant reduction in water levels on the property of an existing offsite land use to the extent that: the designed function of a water body and related surface water management improvements are damaged (not including aesthetic values); or result in damage to agriculture, including damage resulting from reduction in soil moisture resulting from water use, or land collapse or subsidence caused by reduction in water levels associated with water use.

Upper Floridan Aquifer

Land uses that are dependent upon water being on or near land surface and that existed prior to this application are protected from harm. The WWF and SWWF ASR facilities inject fresh Biscayne aquifer water for later retrieval as part of ASR operations. The cone of depression for the Hialeah RO wellfield does not extend to the West and Southwest ASR wells, however the proposed SMH FAS wellfield cone of depression does (Exhibit 16). In order to assess possible impact as a result of the SMH FAS withdrawals on the ASR operation, MODPATH, a particle tracking post-processing package for MODFLOW (Pollack, 1994) was run. Particles were added directly to the south of the SWWF ASR well model cells. Simulation 5 was run for 30 years first in MODFLOW, and then MODPATH was run in order to assess particle movement. The MODPATH model run was analyzed to assess the impact of SMH and the existing legal users on the SWWF ASR system. After a run of 30 years, particles traveled 365 feet from their original position.

Pursuant to Subsection 3.6.2 of the AH, the use is not expected to result in significant reduction in water levels on the property of an existing offsite land use to the extent that: the designed function of a water body and related surface water

Migration of Saline Water

Biscayne Aquifer

Inland movement of sea water in Miami-Dade County began in the 1920's and 1930's when canals were constructed that lowered groundwater levels in the SAS. In the 1940's salinity control structures were installed in the canals as far seaward as possible, which prevented unimpeded inland saltwater flow. In the 1960's other structures were installed along the canals and water levels were stepped down, which lowered water levels at the final "step" before discharging to tide. This resulted in

some inland movement of saltwater. Beginning in 1976, additional water was routed to the county, raising water levels along the coast and slowing or reversing inland movement of the saltwater front. In addition, withdrawals have been reduced at coastal wellfields when western wellfields became operational.

The District operates numerous salinity control structures in Miami-Dade County. The water control levels were discussed in the Water Resource Availability section above. Additional protection for the central wellfields is provided by the construction of a water control structure located on the Ludlum Canal, south of S.W. 88th Street and east of the Alexander-Orr Wellfield and U.S. Highway 1, completed in May 2004, to further reduce the potential for saltwater intrusion.

Miami-Dade County has a cooperative agreement with the USGS to collect water level data from 117 monitoring wells, chloride data from 66 saltwater interface monitoring stations and induction logs from 33 of the wells as part of a saline water intrusion monitor network. Additionally, a total of 36 water level monitoring stations, and one saltwater intrusion monitoring well not funded by MDWASD are sampled by the USGS (Exhibit 17). Since 2007, 12 new saline intrusion monitor wells have been installed in the county. Water levels are monitored continuously at some stations, and monthly, every two months, quarterly, semi-annually, or annually for some others. Chloride sampling is done monthly, quarterly, or annually depending on location and induction logs are collected annually for select wells. Current monitoring facilities are listed and mapped on Exhibit 17.

Of the 48 monitor wells sampled in Miami-Dade County, 16 wells are east of the 1,000 mg/L isochlor line defined in 2018, to monitor saltwater movement as opposed to being early warning wells. The saline water interface in the Biscayne aquifer, as delineated in 1995 and 2018, can be seen on Exhibit 17, Pages 4-7. All 10 wells east of the saltwater front from the Broward County line to the C-2 Canal have been showing an increasing trend in chloride concentration, which indicates a regional cause for the movement rather than localized well withdrawals. The Permittee's nearest wellfields to the 2018 saltwater front are Miami Springs Lower (1.75 miles) and Hialeah (2.1 miles) in the north system and Alexander Orr (3.1 miles) in the central system. These wellfields are a significant distance from the saltwater front compared to the slow rate of movement. In addition, continued monitoring is required in this permit pursuant to Special Condition 37.

Predicted end of dry season water level elevation contours are shown on Exhibit 18. The groundwater level profile at the end of the dry season across the Alexander-Orr Wellfield is depicted in Exhibit 19. The mound of fresh water between Alexander-Orr Wellfield and the location of the saltwater interface in the BASE scenario is 1.4 feet. A reduction of 0.2 feet in this mound is observed in the proposed scenario. The 2018 isochlor is at least three miles from the active wells and the proposed increases in withdrawals will be offset by an increase in deliveries to C-2 from the C-51 Reservoir, Phase I. Conservative modeling that does not account for delivery of the offset shows

no change in cumulative drawdown at the salt front at the end of the 1-in-10 drought year and its value is generally no higher than the 0.1 standard change in net drawdown at the salt front at the end of the 1-in-10 drought year.

The groundwater level profile at the end of the dry season across the Newton Wellfield is depicted in Exhibit 19. There is no longer evidence of a freshwater mound between Newton Wellfield and the location of the saltwater interface for the BASE. The proposed allocation for Newton Wellfield was reduced by 1.6 MGD (from 2.6 MGD (BASE) to 1.0 MGD). The reduction in groundwater levels between the proposed scenario and the BASE is lower than 0.05 ft.

MDWASD, with the USGS, is committed to continuing its existing saline water intrusion monitoring plan. Therefore, based on conservative modeling results, stable water quality, and continued monitoring, the potential for harm due to saline water intrusion is effectively minimized.

Pursuant to Subsection 3.4 of the AH, the existing and proposed use will not cause saline water intrusion because the use is not expected to cause further net inflow of groundwater from the saline water source toward the withdrawal point.

Upper Floridan Aquifer

Water in the Upper Floridan aquifer in southeastern Florida is brackish with chloride and dissolved-solids concentrations generally greater than 1,000 mg/L. Salinity in the Upper Floridan aquifer usually increases with depth. The Lower Floridan aquifer contains water with a salinity similar to that of seawater. Because of the relative lack of development of the FAS in southeastern Florida, the quality of groundwater in the aquifer system is considered to have remained virtually constant during the period 1940 to 1990. USGS WRI 94-4010 mapped the base of the brackish water zone at approximately -1,800 feet bls. The Floridan aquifer wells at the Hialeah and SMH Wellfields are designed to be approximately 1,200 to 1,300 feet bls. Chloride concentrations at the Hialeah RO site are currently about 3,440 mg/L (Hialeah RO-1, September 2021), up from 1,780 mg/l in 2014. Chloride concentrations at the proposed SMH wellfield are unknown but are assumed to be similar to the Hialeah RO Wellfield pre-development level of about 1,800 mg/L. Increases in salinity will result in an increase the treatment losses and additional withdrawals may become necessary to meet finished water demands. Special Condition 37 requires that the Permittee sample for chloride concentration at the production wells to monitor for increases in concentration which could indicate upconing and affect the RO treatment efficiencies.

Pursuant to Subsection 3.4.1 of the AH, the proposed use from the upper Floridan aquifer may cause limited increases in salinity but not to the extent of interfering with presently existing legal users, otherwise harming the resource, or rendering the resource no longer usable by the Permittee.

Wetland Environments

WATER RESOURCE IMPACT EVALUATION (CONTINUED)

Biscayne Aquifer

Wetlands were identified within the cone of depresion predicted for the Northwest (NWW), Southwest (SWWF), Snapper Creek (SC), Alexander-Orr (AO) wellfields. The potential for harm to wetlands was analyzed using the modeling results for the drawdown difference between the BASE condition (currently authorized use) and the alternative condition (proposed allocation) for the cumulative use (Exhibit 14). Exhibit 20 depicts the location of wetlands evaluated during this review. Staff considered wetlands within mitigation areas protected by conservation easements (green polygons in Exhibit 20) as well as others throughout the area of influence.

As a result of the proposed reduced allocation for the NWW, the modeling predicts a water level rebound (less drawdown than previously authorized) under wetlands. The cumulative predicted drawdowns did not result in greater than 1.0 foot of drawdown under Category 2 wetlands within the cone of depression for SWWF, SC, and AO wellfields. However, an additional 0.2 feet predicted cumulative drawdown over the base condition extends beneath Category 3 wetlands in the area of the Bird Drive Basin, including large areas of wetlands west of 157th Avenue as well as those in Tree Island Park and several conservation easements authorized by the Environmental Resource Permits 13-06029-P, 13-01848-P, 13-01787-P, 13-01700-P, 13-01487-P, and 13-01889-P. Category 3 wetlands are considered short hydroperiod wetlands, so the narrative standard for harm rather than the numeric standard for Category 2 wetlands is applied. The drawdown predicted for the base condition for this area is as much as 0.7 feet, so any additional drawdown could potentially result in harm.

The wetlands can generally be characterized as sawgrass and muhly grass prairie with varying degrees of infestation by exotic vegetation such as Melaleuca. Based on recent observations by Miami-Dade Department of Regulatory and Economic Resources (DERM) staff, water depths in the wet season can be waist-deep, but drainage occurs quickly. The hydrology and vegetative quality of most wetlands in the vicinity have previously been impacted to varying degrees by a combination of historic regional surface water management infrastructure and operations, development and land use patterns; and regional water supply infrastructure and operations which cannot be directly attributed to any one of these past improvements. Water level and vegetation data comparing historic to current conditions to current levels in relation to wellfield withdrawals is not available. Therefore, the District is unable to determine what amount of historic wetland harm, if any, can be directly attributed to the permittee's past water use withdrawals from the Biscayne aquifer.

The Permittee proposes water level monitoring at several locations within Bird Drive Basin, including Tree Island Park, where data is currently lacking. Water level data will be correlated with pumping data to determine if and to what extent withdrawals may reduce water levels such that harm to the wetlands may occur. Adjustments to the Wellfield Operational Plan shall be implemented if action is supported by the data. The

details of the monitoring plan are described in Exhibit 21.

Considering these factors, and based upon application of the narrative standard that the hydrologic alteration of the water use shall not adversely impact the values of wetland functions so as to cause harm to the abundance, diversity and habitat of fish, wildlife and listed species, the potential for harm to occur to wetlands as a result of the withdrawal of the recommended allocation is considered minimal.

Upper Floridan Aquifer

The wetlands are separated from the Upper Floridan aquifer well drawdowns by 600 feet of low permeability material. Therefore, the upper Floridan aquifer well withdrawals do not impact the wetlands.

Sources of Pollution

Biscayne Aquifer

Subsection 3.5 of the AH states that the issuance of a water-use permit requires that any proposed aquifer withdrawals must not cause significant degradation of surface water- or groundwater-quality through the induced movement of pollutants into a non-polluted water resource, as significant water-quality degradation may result from altering the rate or direction of pollutant movement.

Maps with the relationship of contaminated sites and flow vectors are shown in Exhibit 22. There are no significant changes in flow vectors around the Northwest Wellfield; there is only a slight change in flow direction south of the wellfield, partially reversing the flow away from the wellfield (Exhibit 22, Page 2). In the case of Miami-Springs-Hialeah-Preston, no significant changes to flow vectors were observed; there is only a slight change in flow direction around the West Wellfield, partially reversing the flow away from the wellfield (Exhibit 22, Page 3). There are no significant changes in flow vectors around the Southwest, Snapper Creek, and Alexander-Orr wellfields, except for slight changes north of Alexander Orr, wherein, the flow rotates toward the Alexander Orr Wellfield (Exhibit 22, Page 3); a close analysis is explained further below. The contaminated sites in question and their corresponding folio numbers are listed in Exhibit 22, Page 5.

There are no changes in flow vectors around Cluster 10 (Exhibit 22, Page 4) except for one location, Leisure City Service Center (Folio #: 3079040130010), southeast of the Wellfield within the Leisure City Wellfield Protection Area (WPA). This change is mainly due to the increased allocation for Leisure City. This single flow vector variation should not create any meaningful problems since it is within the Leisure City WPA.

Exhibit 18 shows county-wide groundwater level contours at 1.0-foot intervals for both the BASE and the proposed alternative. At this level of discretization, there are no major changes in groundwater levels between the BASE and proposed allocations. For the Southwest, Snapper Creek, and Alexander-Orr wellfields, a 0.1-foot interval zoom-in is shown for both the BASE and proposed alternative allocations in Exhibits

18, Pages 2-3. The changes in groundwater levels confirm the change in velocity vectors in the area north of Alexander Orr. However, the 11 sites in question are within the WPA and do not create any adverse impacts when compared to the BASE. this is explained in Exhibit 18, Page 4 labels. The status of those 11 sites is documented in Exhibit 17, Page 5. In the case of Cluster 10, the BASE and proposed allocations are presented in Exhibit 18, Page 5. The gradient is very subtle but there is a change in gradient at the Leisure City Service Center (Folio Number: 3079040130010) contaminated site, which implies that the water around the contamination site flows toward Leisure City.

The Model results then indicate that the additional withdrawals in the proposed alternative allocation do not significantly alter the rate or direction of movement of potential pollutant concentrations from the identified sites when compared to the BASE. Optimization and trial-and error pumpage methodologies were used so that the proposed alternative would not significantly alter flow directions.

The recommended allocations are not expected to result in altering the rate or direction of movement of pollutants, if present, to cause significant degradation of surface or groundwater quality through the induced movement of pollutants into a water resource that is not polluted.

Upper Floridan Aquifer

There are no known sources of pollution reported within the Upper Floridan aquifer. Potential pollution sources located near surface are separated from the Upper Floridan Aquifer well drawdowns by 600 feet of low permeability material. Therefore, the Upper Floridan Aquifer well withdrawals are not anticipated to impact the movement of pollutants.

ADDITIONAL INFORMATION

Regional Issues

Minimum Flows and Levels

As part of the conditions for permit issuance in Chapter 373, Florida Statutes (F.S.), including District implementing rules, a consumptive use permit applicant must provide reasonable assurances regarding protection of Lower East Coast Everglades and Minimum Flow and Level (MFL) Water Bodies, including the Biscayne aquifer, Everglades National Park (ENP) and the Water Conservation Areas (Everglades/MFL Waterbodies).

Biscayne Aquifer MFL and Prevention Strategy:
The MFLs for the Biscayne aquifer, identifying the point at which further withdrawals would cause significant harm, are set forth in Rule 40E-8.23, Florida Administrative Code (F.A.C.). The Biscayne aquifer is in prevention as the MFL is not expected to be

exceeded over the next 20 years providing the Prevention Strategy as identified in Rule 40E-8.421(4), F.A.C. is maintained.

The Permittee has provided reasonable assurances that the proposed allocations will not cause the coastal canal stages to drop below their minimums as no increase in withdrawals from the Biscayne aquifer are proposed. The Permittee has provided reasonable assurances that the proposed allocations are consistent with the saltwater intrusion prevention criteria in 40E-2, F.A.C. and they will be maintaining an adequate saltwater monitoring network. The permit is conditioned to require the Permittee to implement alternative water supply development projects. The Permittee is also working with the USGS to conduct saltwater intrusion modeling. Based on these findings, the applicant has demonstrated that the proposed use is consistent with the prevention strategy.

Everglades MFL and Recovery Strategy:
The MFLs for Everglades Waterbodies, identifying the point at which further withdrawals would cause significant harm, are set forth in Rule 40E-8.221(3), F.A.C. The Everglades MFL Waterbodies are in recovery as the MFL is not met under current system conditions. The Everglades MFL Recovery Strategy is identified in Rule 40E-8.421(1) and (2), F.A.C.

The primary component of the MFL recovery strategy is implementation of the Everglades restoration projects, including the Comprehensive Everglades Recovery Plan (CERP). The Everglades MFL recovery strategy also includes limitations on impacts to the MFL Waterbodies due to consumptive use permit withdrawals in Subsection 3.9.1 of the AH.

Subsection 3.9.1 of the AH requires the permit applicant to demonstrate the impact of the proposed withdrawal will be corrected through implementation of the recovery strategy, including Everglades restoration under the CERP, and that the level of impacts from the proposed allocation would not exceed those authorized under the permits under review for renewal. A pumpage value higher than 347 MGD was used in the analysis to develop the recovery strategy and the Everglades water body impacts above 343.7 MGD are being offset by the Permittee. As a result, the MFL recovery plan requirements are met.

Regional Water Availability

Allocation restrictions in the Lower East Coast Service Areas 1, 2, and 3, (Subsection 3.2.1.E of the AH) ensures that continuing and increasing consumptive use withdrawals in identified portions of Miami-Dade, Broward, and Palm Beach Counties are consistent with Everglades restoration and MFL recovery plans, including CERP. Several technical evaluations were conducted to provide reasonable assurances pursuant to Regional Water Availability Rule requirements. These evaluations, along with staff findings and recommendations under these rules, are outlined below:

ADDITIONAL INFORMATION (CONTINUED)

Pursuant to Subsection 3.2.1.E of the AH, the requested allocation cannot cause a net increase in the volume or cause a change in timing on a monthly basis of the surface and groundwater withdrawn from the Lower East Coast Everglades Waterbodies over base condition water use withdrawals from such Waterbodies. For public water supplies, the base condition water use is that withdrawn over any consecutive 12 month period during the 5 years preceding April 1, 2006.

Optimization modeling in conjunction with the utilization of 15 MGD of offset water from the C-51 Reservoir, Phase 1 water demonstrates that the adjusted base condition of 392.2 MGD will not cause a net increase in the volume or cause a change in timing on a monthly basis from the identified Regional Waterbodies.

Exhibit 23 lists how the historic base condition of 349.5 MGD was broken down by wellfield as well as the adjusted 392.2 MGD base condition. MDWASD will meet the remainder of the projected increase in raw water demands (13.3 MGD) from the UFA.

In summary, Staff determined that the Biscayne aquifer allocation to 392.2 MGD (the modified base condition), in addition to existing and proposed withdrawals from the UFA, provides reasonable assurances that the proposed permit does not cause a net increase in the volume or change in timing on a monthly basis of surface and groundwater withdrawn from the Lower East Coast Everglades over that which occurred under the base condition water use.

CERP Projects:
There are several CERP projects within Miami-Dade County: Biscayne Bay Coastal Wetlands, Broward County Water Preserve Area Water Conservation Area (WCA) 3A/3B Seepage Management, C-111 Spreader Canal, and ENP Seepage Management Project (see Exhibit 24).

The goal of the Biscayne Bay Coastal Wetlands project is to restore coastal wetlands and provide more natural overland freshwater discharges to Biscayne Bay. The project consists of constructing and operating a series of pumps, culverts canal improvements and ditch infilling. The northernmost flow-way will be located near the Deering Estate. The southernmost flow-way will be located in the Cutler wetlands near the C-1 Canal, while a series of culverts and pump stations will be installed between the C-102 and C-103 Canals to re-establish sheet flow to the east of the L-31E Canal. The Cutler location is immediately north of the Miami-Dade South Wastewater Treatment Plant (SDWWTP). In the Florida Department of Environmental Protection (FDEP) Consent Order for the SDWWTP, Miami-Dade County committed to be the local sponsor for the South Miami-Dade Reuse project which will benefit the Biscayne Bay Coastal Wetlands Project by providing new water in the form of reuse to the project. The potential exists that MDWASD may provide approximately 89 MGD of wastewater to be reclaimed for this project.

ADDITIONAL INFORMATION (CONTINUED)

The WCA 3A/3B Seepage Management Project objective is to reduce the rate of seepage from Water Conservation Areas 3A and 3B by increasing groundwater levels by one foot in the seepage management area using water captured from storm events. Withdrawals from the Northwest Wellfield were included in the analysis of the project design and no increases from the wellfield are included in this permit renewal.

The ENP Seepage Management Project includes four components: L31N (L-30) Seepage Management Pilot Project, Dade-Broward Levee, Bird Drive Recharge Area and S-356 Structure Relocation. The purpose of the L31N (L30) Seepage Management Pilot Project is to investigate technologies to manage seepage along the L-30 and L-31N Canals while providing adequate wet season flows to the West Wellfield and Biscayne Bay. The Dade/Broward Levee component includes building a new Dade/Broward levee and canal to reduce seepage losses to the east from WCA-3B and the Pennsuco wetlands. The Bird Drive Recharge Area's purpose is to recharge groundwater and reduce seepage from ENP by increasing water table elevations east of Krome Avenue.

The C-111 Spreader Canal Western Project's goal is to improve the quantity, timing, and distribution of water delivered to Florida Bay via Taylor Slough, and improve hydroperiods and hydropatterns within the Southern Glades and Model Lands. The future C-111 Spreader Canal Eastern Project is intended to increase sheetflow within the Southern Glades and Model Lands as a means of more naturally delivering water to Florida Bay. There are no MDWASD withdrawals in the vicinity of the C-111 Spreader Canal projects.

Based on best available information, it is reasonable to assume that negative impacts to CERP projects will not occur as a result of this renewal. Pursuant to Special Condition 59, if the use of water becomes inconsistent with implementation of CERP or causes harm to a CERP project, the permit shall be modified.

Water Reservations

Nearshore Central Biscayne Bay Water Reservation:
The Project is located within the portion of Miami-Dade County which covers the water reservation area for Biscayne Bay as identified in Rules 40E-10.021 and 40E10.061, F.A.C. The Project is withdrawing groundwater which, in accordance with Subsection 3.11.3 of the AH, is not considered a withdrawal of reserved water.

Project Site Issues

Legal Control and Land Use

The Permittee maintains legal control and/or has legal access to all facilities in its service area.

Existing and Proposed Service Area and Interconnects:
MDWASD supplies treated water on a volume basis to most of the municipally owned

water utilities of Miami-Dade County, with the exceptions of Florida City and North Miami Beach and a portion of the water requirements of the City of North Miami. A map showing the MDWASD Service Areas is presented as Exhibit 2. Exhibit 25 lists and shows the Miami-Dade wholesale customers.

The Hialeah-Preston and Alexander-Orr WTPs are connected via their distribution systems (Exhibit 26). There is no direct, metered interconnect between the two systems, however, it is estimated that approximately 40 MGD of finished water can be transferred between the systems. The 5 existing WTPs of the South Miami-Dade Service Area currently share a 48-inch diameter interconnection with the Alexander Orr Jr. WTP. The proposed Cluster 10 Wellfield is added to the South Miami-Dade Service Area. An interconnection to the Alexander-Orr WTP system is planned for the future South Miami-Dade Membrane and RO Plants. There are also emergency interconnects to adjacent utilities in the cities of North Miami, North Miami Beach and Homestead (Exhibit 27).

Water Supply Facilities:
The existing MDWASD water supply system is comprised of 8 major Biscayne aquifer wellfields in the Hialeah-Preston and Alexander Orr, Jr. subareas, 12 Biscayne aquifer water supply wells located at five individual water systems (formerly Rex Utility District water system) in South Miami-Dade County and ASR wells at the Alexander Orr, Jr. Subarea, as shown on Exhibits 3 and 26.

Water Treatment Facilities:
Hialeah-Preston WTP: The John E. Preston WTP-Hialeah WTP has a combined rated capacity of 225 MGD. The total installed capacity for Hialeah-Preston WTPs is 235 MGD. The Hialeah and John E. Preston WTPs treatment process includes primarily lime softening, disinfection, and filtration.

Hialeah RO WTP: Phase 1 of the Hialeah RO Plant was completed in December, 2013. Of the 10 MGD produced, 5 MGD is routed to the MDWASD transmission line through a 36-inch diameter line along NW 170 Street, and enters the MDWASD transmission pipelines via connection at 179th Street and NW 87th Ave. Five MGD is routed to the City of Hialeah transmission system, and routed through a 30-inch diameter line from NW 166th Street, down south along NW 97th Ave, and will enter into the City of Hialeah system at NW 154th Street and NW 97th Ave. The design build-out of the Hialeah RO plant is for a capacity to treat 10.0 MGD of raw water to produce 7.5 MGD of finished water (Exhibit 7).

Alexander Orr: The Alexander Orr, Jr. WTP has a rated capacity of 214.74 MGD and a total installed capacity of 256 MGD. The WTP utilizes lime softening with activated sodium silicate, recarbonation, chlorination, ammoniation, and filtration.

South Miami-Dade: The existing five wellfields in the South Miami-Dade area have a

treatment facility that disinfects the raw water by chlorination. The Leisure City facility has a design flow of 6.48 MGD. The DERM-rated capacity for the Newton Water Plant, the Elevated Tank facility, the Everglades Labor Camp Water Plant, and the Naranja Water Plant are 2.01 MGD, 1.44 MGD, 0.96 MGD, and 1.38 MGD respectively.

Additional Information on the Water Treatment Facilities are shown on Exhibit 28.

Water Conservation Plan

The elements of the water conservation plan and implementation Schedule are shown on Exhibit 29.

The Permittee used the Standard Water Conservation Plan. The County's plan was developed for the region served by MDWASD as well as the 15 water utilities that receive wholesale water from MDWASD. The estimated reduction in demands over the life of the plan is shown in Exhibit 20 and the allocations have been adjusted to include the effects of the conservation program. Special Condition 17 requires implementation of the plan along with annual reporting of progress and 10-year audits to determine if water use adjustments are necessary.

Potential Use of Reclaimed Water

MDWASD's projected finished water demands are lower than anticipated when the first 20-year water use permit application was submitted. Wastewater reuse is no longer required to address water supply demands. Other alternative water supplies (UFA, water conservation, C-51 Reservoir, Phase 1, et cetera) have been determined to be more viable and shall be considered in the future. MDWASD is currently implementing a total of 16.49 MGD of reuse at each of the WTP's, primarily for in-plant (process water) use. In addition, MDWASD will be providing up to 15 MGD of reclaimed water from the South District Wastewater Treatment Plant to the Florida Power & Light facilities at Turkey Point, per Miami-Dade County Resolution No. R-579-20 approved by the Board of County Commissioners on June 16, 2020.

Permit Duration

Staff recommends a water use permit duration as follows:

Consistent with Subsection 1.5.2.C.3.a of the AH, the base condition allocation from the Biscayne aquifer (143,153 MG annually and 12,526 MG maximum month) will have a duration of 20 years from the date of permit issuance.

The UFA is not a source of limited availability and therefore the permit duration may be up to 20 years for this source, pursuant to Subsection 1.5.2, AH.

Consistent with Florida Statute 373.236(6)(a), a water use permit may be issued for a period of up to 50 years to entities that have entered into an agreement with a

ADDITIONAL INFORMATION (CONTINUED)

landowner for the purpose of more efficiently pursuing alternative public water supply development projects. The C-51 Reservoir, Phase 1 consumptive water use permit issued by the FDEP has an expiration date of December 27, 2065. Therefore, the allocation of water above the base condition water use served by offset water from the C-51 Reservoir, Phase 1 (5,475 MGY and 479.06 MGM) will have an expiration date of December 27, 2065.

ENVIRONMENTAL RESOURCE PERMIT STATUS:

Not Applicable

RIGHT OF WAY PERMIT STATUS:

Not Applicable

RECOMMENDATIONS

Project Name: MIAMI-DADE CONSOLIDATED P W S

Application Number: 201117-4

Permit Number: 13-00017-W

RECOMMENDATION

The use of groundwater from the Biscayne aquifer and Upper Floridan aquifer for Public water supply for MDWASD Service Area serving 2,912,830 persons in the year 2040 with an average per capita use rate of 139.2 gallons per day and a maximum monthly to average monthly pumping ratio of 1.05:1 with an annual allocation of 148,018.00 million gallons.

STAFF EVALUATION

REVIEWER:

for

Caroline Hanes, NRM

John A. Lockwood, P.G., WU

SUPERVISOR:

Barbara J. Conmy, NRM

Nicholas M. Vitani, P.G., WU

WATER USE BUREAU CHIEF:

Simon Sunderland, P.G.

Date: March 7, 2022

SPECIAL PERMIT CONDITIONS

1. This permit is issued to:
   MIAMI-DADE WATER AND SEWER DEPARTMENT
   3071 S.W. 38TH AVENUE
   MIAMI, FL 33146

2. This permit shall expire on December 27, 2065.

3. Use classification is:

   Public Water Supply
   Aquifer Storage And Recovery

4. Source classification is:

   Groundwater from:
   Biscayne Aquifer
   Upper Floridan Aquifer

5. Allocation:

   Total annual allocation is 148,018.00 million gallons (MG). (405.53 MGD).

   Total maximum monthly allocation is 12,951.61 MG.

   Between March 12, 2042 and December 27, 2065, without renewal of the base condition allocation, withdrawals from the Biscayne aquifer that are offset from the C-51 Reservoir, Phase 1 Project shall be limited to:

   Annual allocation shall not exceed 5,475 MG (15 MGD).

   Maximum monthly allocation shall not exceed 479 MG.

   These allocations represent the amount of water required to meet the water demands as a result of a rainfall deficit during a drought with the probability of recurring one year in ten. The Permittee shall not exceed these allocations in hydrologic conditions less than a 1-in-10 year drought event. Compliance with the annual allocation is based on the quantity withdrawn over a 12-month time period. Compliance with the maximum monthly allocation is based on the greatest quantity withdrawn in any single month. The annual allocation expressed in GPD or MGD is for informational purposes only.

   If the rainfall deficit is more severe than that expected to recur once every ten years, the withdrawals shall not exceed that amount necessary to continue to meet the reasonable-beneficial demands under such conditions, provided no harm to the water

resources occur and:

1. All other conditions of the permit are met; and
2. The withdrawal is otherwise consistent with applicable declared Water Shortage Orders in effect pursuant to Chapter 40E-21, F.A.C.

Prior to the C-51 Phase 1 Project Being Operational, withdrawals from the Biscayne aquifer are limited to the established base condition of 127,567.5 MGY (349.5 MGD). Withdrawals from each Biscayne aquifer Wellfield are limited to those authorized in Application Number 150821-12, Specific Permit Conditions 28 through 32.

When the required volume of offset water has been delivered to the Project, the allocations for each Biscayne aquifer Wellfield shall are restricted as shown on Special Permit Conditions 38 through 49.

Withdrawals from the Upper Floridan aquifer are restricted as follows:

Total annual allocation is 4,855.00 million gallons (MG) (13.30 MGD).

Total maximum monthly allocation is 425.73 million gallons (MG).

6. Withdrawal facilities:

Groundwater - Proposed:

8 - 24" X 1200' X 2430 GPM Wells Cased To 1100 Feet
3 - 24" X 70' X 6945 GPM Wells Cased To 35 Feet

Groundwater - Existing:

2 - 24" X 100' X 7500 GPM Wells Cased To 50 Feet
3 - 48" X 88' X 7500 GPM Wells Cased To 33 Feet
1 - 18" X 65' X 1500 GPM Well Cased To 50 Feet
1 - 4" X 74' X 0 GPM Well Cased To 63.5 Feet
20 - 14" X 115' X 2500 GPM Wells Cased To 80 Feet
4 - 24" X 100' X 4900 GPM Wells Cased To 35 Feet
1 - 12" X 40' X 800 GPM Well Cased To 35 Feet
10 - 48" X 80' X 10420 GPM Wells Cased To 46 Feet
1 - 42" X 68' X 10000 GPM Well Cased To 54 Feet
1 - 6" X 30' X 400 GPM Well Cased To 25 Feet
1 - 16" X 50' X 1600 GPM Well Cased To 40 Feet

SPECIAL PERMIT CONDITIONS

1 - 17" X 1522' X 1400 GPM Well Cased To 1090 Feet
1 - 30" X 115' X 4170 GPM Well Cased To 80 Feet
2 - 42" X 68' X 8500 GPM Wells Cased To 54 Feet
1 - 18" X 66' X 1500 GPM Well Cased To 53 Feet
1 - 17" X 1502' X 1400 GPM Well Cased To 1090 Feet
1 - 14" X 115' X 3800 GPM Well Cased To 80 Feet
1 - 30" X 1250' X 3500 GPM Well Cased To 845 Feet
1 - 24" X 70' X 3470 GPM Well Cased To 35 Feet
6 - 42" X 107' X 7000 GPM Wells Cased To 66 Feet
1 - 17" X 1501' X 1400 GPM Well Cased To 1090 Feet
7 - 16" X 100' X 4170 GPM Wells Cased To 40 Feet
2 - 24" X 70' X 6945 GPM Wells Cased To 35 Feet
1 - 17" X 1500' X 1400 GPM Well Cased To 1090 Feet
1 - 42" X 68' X 8500 GPM Well Cased To 60 Feet
1 - 30" X 1210' X 3500 GPM Well Cased To 835 Feet
4 - 40" X 100' X 10420 GPM Wells Cased To 57 Feet
1 - 18" X 55' X 1500 GPM Well Cased To 45 Feet
9 - 17" X 1490' X 1400 GPM Wells Cased To 1080 Feet
1 - 42" X 107' X 7000 GPM Well Cased To 69 Feet
2 - 12" X 40' X 1600 GPM Wells Cased To 35 Feet
4 - 24" X 108' X 8300 GPM Wells Cased To 50 Feet
4 - 24" X 104' X 6940 GPM Wells Cased To 54 Feet
1 - 15" X 1490' X 1400 GPM Well Cased To 1150 Feet
1 - 12" X 35' X 1200 GPM Well Cased To 30 Feet
1 - 48" X 80' X 10416.67 GPM Well Cased To 46 Feet
1 - 12" X 35' X 800 GPM Well Cased To 30 Feet
1 - 30" X 115' X 2500 GPM Well Cased To 80 Feet
1 - 18" X 55' X 1500 GPM Well Cased To 42 Feet
1 - 42" X 68' X 10000 GPM Well Cased To 60 Feet
1 - 18" X 50' X 500 GPM Well Cased To 40 Feet
1 - 16" X 100' X 7500 GPM Well Cased To 40 Feet
6 - 20" X 100' X 4900 GPM Wells Cased To 40 Feet
1 - 30" X 1200' X 3500 GPM Well Cased To 765 Feet
1 - 30" X 1300' X 3500 GPM Well Cased To 850 Feet
1 - 30" X 1200' X 3500 GPM Well Cased To 760 Feet

7. The Permittee shall submit all data as required by the implementation schedule for each of the permit conditions to: SFWMD at www.sfwmd.gov/ePermitting, or Regulatory Support, 3301 Gun Club Road, West Palm Beach, FL 33406.

8. The Permittee must submit the appropriate application form incorporated by reference in Rule 40E-2.101, F.A.C., to the District prior to the permit expiration date in order to continue the use of water.

SPECIAL PERMIT CONDITIONS

9. The Permittee shall secure a well construction permit prior to construction, repair, or abandonment of all wells, as described in Chapter 40E-3, F.A.C.

10. Prior to any withdrawals at the project, the Permittee shall provide the results of the calibration testing of the identified water accounting method(s) and equip all existing and proposed withdrawal facilities with approved water use accounting method(s) pursuant to Subsection 4.1.1 of the Applicant's Handbook for Water Use Permit Applications within the South Florida Water Management District.

11. Every five years from the date of last calibration, the Permittee shall submit re-calibration data for each withdrawal facility.

12. Monthly withdrawals for each withdrawal facility shall be reported to the District quarterly. The water accounting method and means of calibration shall be stated on each report.

13. The monthly volume of water injected into and withdrawn from each Aquifer Storage and Recovery (ASR) well shall be reported to the District quarterly.

14. The Permittee shall notify the District within 30 days of any change in service area boundary that results in a change in demand that affects its permitted allocation. The allocation shall be modified to effectuate such change.

15. The Permittee shall maintain an accurate flow meter at the intake of the water treatment plant for the purpose of measuring daily inflow of water.

    Permittee shall maintain a calibrated flow meter(s) at the intake (raw water) and discharge (treated water) points within the Hialeah/Preston, Alexander Orr, and proposed Hialeah RO and South Miami Heights water treatment plants for the purpose of measuring treatment losses and shall submit monthly data quarterly as required pursuant to Special Condition 12 of Application 201117-4.

16. If at any time there is an indication that the well casing, valves, or controls leak or have become inoperative, repairs or replacement shall be made to restore the system to an operating condition. Failure to make such repairs shall be cause for filling and abandoning the well, in accordance with procedures outlined in Chapter 40E-3, F.A.C.

17. The Standard Water Conservation Plan described in Subsection 2.3.2.F.1.a of the Applicant's Handbook for Water Use Permit Applications within the South Florida Water Management District and Exhibit 26 (Application 201117-4) must continue being implemented.

SPECIAL PERMIT CONDITIONS

The permittee shall submit an annual report covering water conservation activities during the prior calendar year by April 30th of each year describing water conservation activities for the year including expenditures, projects undertaken and estimated water savings.

18. The Permittee shall notify the District within 30 days of entering into an inter-local agreement, contract, or other similar instrument to deliver or receive water outside of its service area or to serve a demand not identified to determine the allocation described in this permit. A copy of such agreement shall be provided to the District. The monthly volume of water delivered and/or received via each inter-local agreement, contract, or other similar instrument shall be submitted to the District at the same reporting frequency as the withdrawals for each withdrawal facility required in this permit.

19. The Permittee shall implement the wellfield operating plan submitted in support of the permit application, as described in the District staff report.

    The wellfield operating plan is shown on Exhibit 8 of Application 201117-4.

20. The Permittee shall determine unaccounted-for distribution system losses (for the entire distribution system) on a monthly basis, including the way these losses are calculated. Reports shall be submitted to the District on a yearly basis and are due by April 30th of each year.

    If unaccounted-for distribution system losses are greater than 10 percent for any given year, the Permittee shall submit to the District for approval, a formal leak detection program that meets the requirements of Subsection 4.1.2 of the Applicant's Handbook for Water Use Permit Applications within the South Florida Water Management District, to address the reduction of such water loss.

21. The Permittee shall maintain an accurate flow meter at the point of discharge from the treatment plant for the purpose of measuring the daily flow of water.

22. The Permittee shall submit to the District an updated "Summary of Groundwater (Well) or Surface Water (Pump or Culvert) Facilities" table ("Section IV - Sources of Water", Water Use Permit Application Form 1379) at least 30 days prior to a change in any facility status (e.g. installation, relocation, abandonment) to include all specifications of the well, pump or culvert (e.g. actual total and cased depths, pump manufacturer and model numbers, pump types, intake depths and type of meters, culvert type, length, cross-section, diameter, height, width, invert elevation, control device, and water use accounting method).

23. The Permittee shall submit to the District an updated "Summary of Groundwater (Well)

Facilities" table ("Section IV - Sources of Water", Water Use Permit Application Form 1379) within 90 days of completion of the proposed wells identifying the actual total and cased depths, pump manufacturer and model numbers, pump types, intake depths and type of meters.

24. If a proposed well location is different from a location specified in the application, the Permittee shall submit to the District an evaluation of the impact of pumpage from the proposed well location on adjacent existing legal uses, pollution sources, environmental features, the saline water interface, and water bodies one month prior to all new well construction. The Permittee is advised the proposed well locations and resulting impacts must be in compliance with all permitting criteria and performance standards in effect at that time.

25. Entities that control, either directly or indirectly, a wastewater treatment plant and/or reuse distribution system, and which have determined pursuant to Section 403.064, F.S., that use of reclaimed water is feasible, must provide the District with annual updates of the following information: (A) the status of distribution system construction, including location and capacity of lines; (B) a summary of uncommitted supplies for the next year; (C) copies of any new or amended local mandatory reclaimed water reuse zone ordinances; and (D) a list of end-users who have contracted to receive reclaimed water and the agreed upon quantity of water to be delivered.

26. Prior to the initial withdrawal above the established base condition water use permitted by offset water, authorization must be granted by the District.

27. The C-51 Reservoir Project Phase 1 is not currently fully operational. For the purpose of this consumptive use permit, the District defines fully operational as the reservoir is fully constructed, all pumps are in place and operational, a District approved flow route to provide offsets to the Project is determined, all agreements with 298 districts are finalized, and water deliveries can be made to the Project and properly accounted for as offset water. In the event C-51 Reservoir, Phase 1 Project water is not available when demands exceed the Biscayne aquifer base condition, the Permittee shall modify the operating plan to utilize the Upper Floridan aquifer to meet the demands unable to be met by the C-51 Reservoir, Phase 1 Project.

28. Prior to receiving offset water from the C-51 Reservoir, Phase 1, the details of the location and configuration of the facility(s) to account for deliveries of offset water to offset additional withdrawals (beyond the base condition of 349.5 MGD) from the Biscayne aquifer Wellfields shall be submitted to the District for approval. The intent of the accounting facility is to ensure that offset water is delivered in the quantities needed and to ensure that the Permittee is obtaining the quantities of water to meet the conditions for permit issuance. Measuring flows will provide reasonable assurances that offset water deliveries are made. Using canal water level elevation data is not

sufficient since the data can be influenced by many factors. Prior to the use of this facility(s), it shall be equipped with a District-approved water use accounting system and a report of calibration shall be submitted to the District prior to the delivery of offset water, pursuant to Subsection 4.1 of the AH. In addition, a report of recalibration for the facility shall be submitted to the District for this facility every five years from each previous calibration, continuing at five-year increments. This condition does not require the Permittee to construct a structure or water accounting apparatus to quantify offset deliveries of C-51 Reservoir, Phase 1 water. The use of an appropriately located existing facility is sufficient. Similarly, the calibration reports for the structure or water accounting facility can be obtained from its owner and provided by the Permittee to the District.

29. The Permittee shall record and submit monthly to the District the C-51 Reservoir, Phase 1 offset water use deliveries from the District approved facility. The water accounting method and means of calibration shall be stated on each report.

30. Withdrawals above the established Biscayne aquifer base condition water use of 11,162.16 million gallons maximum month and 127,567.5 million gallons annual (349.5 million gallons per day) are only authorized if the Permittee has received the required offset water to prevent an increase in volume or change in timing of surface and groundwater withdrawn from the Lower East Coast Everglades Waterbodies over the base condition water use. Such withdrawals must be consistent with the operational plan described in Special Permit Condition 32 of Application 201117-4.

31. Within 30 days of execution, the Permittee shall submit an updated signed copy of any changes made to the Agreement for Capacity Allocation in Phase 1 of the C-51 Reservoir, or similar instrument, to the District.

32. On August 31, 2022 and each year thereafter, the Permittee shall provide an annual update to the District on the progress of the C-51 Reservoir Phase 1 Project. Once the C-51 Reservoir, Phase 1 becomes fully operational, as defined herein, the Permittee shall cease submitting the annual update on the progress of the C-51 Reservoir Phase 1.

33. The Permittee acknowledges that an Operating Plan for the C-51 Reservoir, Phase 1 has not been finalized. The Permittee shall comply with the final operating plan approved by the District prior to the use of offset water above the established base condition water use.

34. Pursuant to Section 373.236(4), F.S., every ten years from the date of permit issuance, the Permittee shall submit a water use compliance report for review and approval by District Staff to SFWMD at www.sfwmd.gov/ePermitting, or Regulatory Support, 3301

Gun Club Road, West Palm Beach, FL 33406.

35. The Permittee shall implement the following saline water intrusion monitoring program:

    The saline water intrusion monitoring plan is shown on Exhibit 17 of Application 201117-4. The permittee shall submit annual Monitoring Program summary reports that summarize the status of the project to update the salt front and install new monitor wells. The annual report shall be due by April 30th of each year.

36. The Permittee shall continue to submit monitoring data in accordance with the approved water level monitoring program for this project.

    Water level monitoring requirements are shown on Exhibit 11 of Application 201117-4.

37. The Permittee shall provide annual status reports to the District that summarizes the Aquifer Storage and Recovery cycle testing activities. Reports shall be submitted to the District on a yearly basis and are due by April 30th of each year.

38. The allocations for the combined Hialeah/John E. Preston/Miami Springs wellfields are:

    Annual allocation: 25,805.00 MGY
    Maximum monthly allocation: 2,257.98 MGM

39. The allocations for the Northwest Wellfield are:

    Annual allocation: 24,929.5 MGY
    Maximum monthly allocation: 2,181.33 MGM

40. The allocations for the Alexander Orr Wellfield are:

    Annual allocation: 22,484.00 MGY
    Maximum monthly allocation: 1,967.35 MGM

41. The allocations for the Snapper Creek Wellfield are:

    Annual allocation: 7,336.50 MGY
    Maximum monthly allocation: 641.94 MGM

42. The allocations for the Southwest Wellfield are:

    Annual allocation: 52,779.00 MGY
    Maximum monthly allocation: 4,618.16 MGM

SPECIAL PERMIT CONDITIONS

43. The allocations for the West Wellfield are:

    Annual allocation: 2,482.00 MGY
    Maximum monthly allocation: 217.18 MGM

44. The allocations for the Elevated Tank Wellfield are:

    Annual allocation: 511.00 MGY
    Maximum monthly allocation: 44.71 MGM

45. The allocations for the Leisure City Wellfield are:

    Annual allocation: 1,752.00 MGY
    Maximum monthly allocation: 153.30 MGM

46. The allocations for the Naranja Wellfield are:

    Annual allocation: 328.50 MGY
    Maximum monthly allocation: 28.74 MGM

47. The allocations for the Everglades Labor Camp Wellfield are:

    Annual allocation: 1,058.50 MGY
    Maximum monthly allocation: 92.62 MGM

48. The allocations for the Newton Wellfield are:

    Annual allocation: 365.00 MGY
    Maximum monthly allocation: 31.94 MGM

49. The allocations for the Cluster 10 Wellfield are:

    Annual allocation: 5,475.00 MGY
    Maximum monthly allocation: 479.06 MGM

50. The Permittee is authorized to exercise the emergency wells at the Medley Wellfield for a total of two hours per month as needed for bacterial clearance and pump maintenance. Operation of the emergency wells at the Medley Wellfield for more than this amount shall require prior approval from SFWMD. Pumpage data shall be collected and reported in accordance with Special Permit Condition 12 of Application 201117-4.

51. The Permittee shall provide annual updates of the status of all alternative water supply

projects. The status report shall include work completed to date, expenditures, and any anticipated changes in timelines. The Permittee shall develop alternative water supplies (including reclaimed water), at a minimum, in accordance with the schedules described in the District staff report and Exhibit 7 (Application 201117-4).

52. Within 29 months after issuance of this Permit, the Permittee shall begin implementation of an environmental monitoring program in the Bird Drive Basin and Tree Island Preserve and Park to monitor the hydrological conditions of wetlands in these areas (Exhibit 21, Application 201117-4).

    The Annual Environmental Monitoring Report shall be due April 30 of each year for the previous calendar year of monitoring.

    The monitoring locations shall consist of the following:

    - Two groundwater monitoring wells at the Bird Drive Basin completed to a depth of 20-feet, with a 5-foot screen at the bottom of the casing.

    - A cluster groundwater monitoring location consisting of three sample intervals at the Tree Island Preserve and Park. The proposed monitoring well cluster will consist of a 20 foot-deep well (shallow interval), a 40 foot-deep well (middle interval), and a 60 foot-deep well (deep interval), with a 5-foot screen at the bottom of the casings.

    - Stilling wells at each of the above three monitoring locations for gauging surface water elevations.

    Groundwater and surface water levels relative to NAVD-88 datum for the above monitoring locations (Bird Drive MW-1, Bird Drive MW-2, Tree Island MW-1 [20 ft], Tree Island MW-2 [40 ft], Tree Island MW-3 [60 ft], Stilling Well 1, Stilling Well 2, and Stilling Well 3) shall be collected monthly and submitted annually as part of an Annual Environmental Monitoring Report containing hydrographs and a trend analysis of the hydrological condition of the wetlands at each location (Bird Drive Basin and Tree Island Preserve and Park). The Annual Environmental Monitoring Report shall also contain monthly pumpage data for production wells in this vicinity and an analysis provided to demonstrate that withdrawals are not causing harm to wetlands. The Annual Environmental Monitoring Report shall be due April 30 of each year for the previous calendar year of monitoring.

53. The permittee shall operate surface water control structure known as the Mid-canal structure and bridge in accordance with the approved operational plan included in Exhibit 31. In addition, whenever this structure is opened for the purpose of raising water in the Wellfield Protection Canal down stream of the structure, the upstream structure that delivers water from the L-30 canal shall be opened in a manner to deliver equal volumes to those passed through the Mid-canal structure and bridge.

SPECIAL PERMIT CONDITIONS

The permittee shall submit operation and flow data logs regarding both structures to the District quarterly.

54. In the event that a milestone specified in the alternative water supply schedule and plan contained in Exhibit 7 of Application 201117-4 is going to be missed, the permittee shall notify the Executive Director of the District in writing explaining the nature of the delay, actions taken to bring the project back on schedule and an assessment of the impact the delay would have on the rates of withdrawals from the Everglades water bodies and associated canals as defined in SFWMD consumptive use permitting rules. The District will evaluate the situation and take actions as appropriate which could include: a.) granting an extension of time to complete the project (if the delay is minor and doesn't affect the Everglades Waterbodies or otherwise violates permit conditions), b.) take enforcement actions including consent orders and penalties, c.) modify allocations contained in this permit from the Biscayne aquifer including capping withdrawal rates until the alternative water supply project(s) are completed (in cases where the delay would result in violations of permit conditions) or d.) working with the Department of Community Affairs to limit increase demands for water until the alternative water supply project is completed.

55. The permittee may request temporary authorization from the District to capture and store stormwater via withdrawals from the permitted Biscayne aquifer production wells, for storage within the Floridan aquifer system consistent with their FDEP issued Underground Injection Control permits.The District will consider the availability of stormwater that is not otherwise needed for environmental protection or enhancement and is in no way bound to authorize such requests. All such requests shall be made in writing to the Director of Water Use Regulation.

56. If it is determined that the conditions for permit issuance are no longer met for the permit duration, the permittee shall obtain a modification of the Permit from the District as necessary to come into compliance with the conditions for permit issuance. Such conditions for permit issuance include minimum flows and levels, water reservations, and other conditions ensuring the use does not cause water resource harm and is consistent with the objectives of the District, including implementation of the Comprehensive Everglades Restoration Plan.

57. The permittee shall operate the West Wellfield in accordance with the Memorandum of Understanding between the U.S. Department of the Interior, the Governor of the State of Florida, Miami Dade County and the District incorporated in Exhibit 31 of Application 201117-4.

STANDARD PERMIT CONDITIONS

1. All water uses authorized by this permit shall be implemented as conditioned by this permit, including any documents incorporated by reference in a permit condition. The District may revoke this permit, in whole or in part, or take enforcement action, pursuant to Section 373.136 or 373.243, F.S., unless a permit modification has been obtained to address the noncompliance.

   The Permittee shall immediately notify the District in writing of any previously submitted material information that is later discovered to be inaccurate.

2. The Permittee is advised that this permit does not relieve any person from the requirement to obtain all necessary federal, state, local and special district authorizations.

3. The Permittee shall notify the District in writing within 30 days of any sale, transfer, or conveyance of ownership or any other loss of permitted legal control of the Project and/or related facilities from which the permitted consumptive use is made. Where Permittee's control of the land subject to the permit was demonstrated through a lease, the Permittee must either submit a new or modified lease showing that it continues to have legal control or documentation showing a transfer in control of the permitted system/project to the new landowner or new lessee. All transfers of ownership are subject to the requirements of Rule 40E-1.6107, F.A.C. Alternatively, the Permittee may surrender the consumptive use permit to the District, thereby relinquishing the right to conduct any activities under the permit.

4. Nothing in this permit should be construed to limit the authority of the District to declare a water shortage and issue orders pursuant to Chapter 373, F.S. In the event of a declared water shortage, the Permittee must adhere to the water shortage restrictions, as specified by the District. The Permittee is advised that during a water shortage, reports shall be submitted as required by District rule or order. The Permittee is advised that during a water shortage, pumpage, water levels, and water quality data shall be collected and submitted as required by District orders issued pursuant to Chapter 40E-21, F.A.C.

5. This permit does not convey to the Permittee any property rights or privileges other than those specified herein, nor relieve the permittee from complying with any applicable local government, state, or federal law, rule, or ordinance.

6. With advance notice to the Permittee, District staff with proper identification shall have permission to enter, inspect, observe, collect samples, and take measurements of permitted facilities to determine compliance with the permit conditions and permitted plans and specifications. The Permittee shall either accompany District staff onto the property or make provision for access onto the property.

7. A. The Permittee may seek modification of any term of an unexpired permit. The Permittee is advised that Section 373.239, F.S., and Rule 40E-2.331, F.A.C., are applicable to permit modifications.

   B. The Permittee shall notify the District in writing 30 days prior to any changes to the project that could potentially alter the reasonable demand reflected in the permitted allocation. Such changes include, but are not limited to, change in irrigated acreage, crop type, irrigation system, large users agreements, or water treatment method. Permittee will be required to apply for a modification of the permit for any changes in permitted allocation.

8. If any condition of the permit is violated, the permit shall be subject to review and modification, enforcement action, or revocation pursuant to Chapter 373, F.S.

9. The Permittee shall mitigate interference with existing legal uses that was caused in whole or in part by the Permittee's withdrawals, consistent with the approved mitigation plan. As necessary to offset the interference, mitigation will include pumpage reduction, replacement of the impacted individual's equipment, relocation of wells, change in withdrawal source, or other means.

   Interference to an existing legal use is defined as an impact that occurs under hydrologic conditions equal to or less severe than a 1-in-10 year drought event that results in the:

   A. Inability to withdraw water consistent with provisions of the permit, such as when remedial structural or operational actions not materially authorized by existing permits must be taken to address the interference; or

   B. Change in the quality of water pursuant to primary State Drinking Water Standards to the extent that the water can no longer be used for its authorized purpose, or such change is imminent.

10. The Permittee shall mitigate harm to the natural resources caused by the Permittee's withdrawals, as determined through reference to the conditions for permit issuance. When harm occurs, or is imminent, the District will require the Permittee to modify withdrawal rates or mitigate the harm. Harm, as determined through reference to the conditions for permit issuance includes:

    A. Reduction in ground or surface water levels that results in harmful lateral movement of the fresh water/salt water interface,

    B. Reduction in water levels that harm the hydroperiod of wetlands,

    C. Significant reduction in water levels or hydroperiod in a naturally occurring water body such as a lake or pond,

D. Harmful movement of contaminants in violation of state water quality standards, or

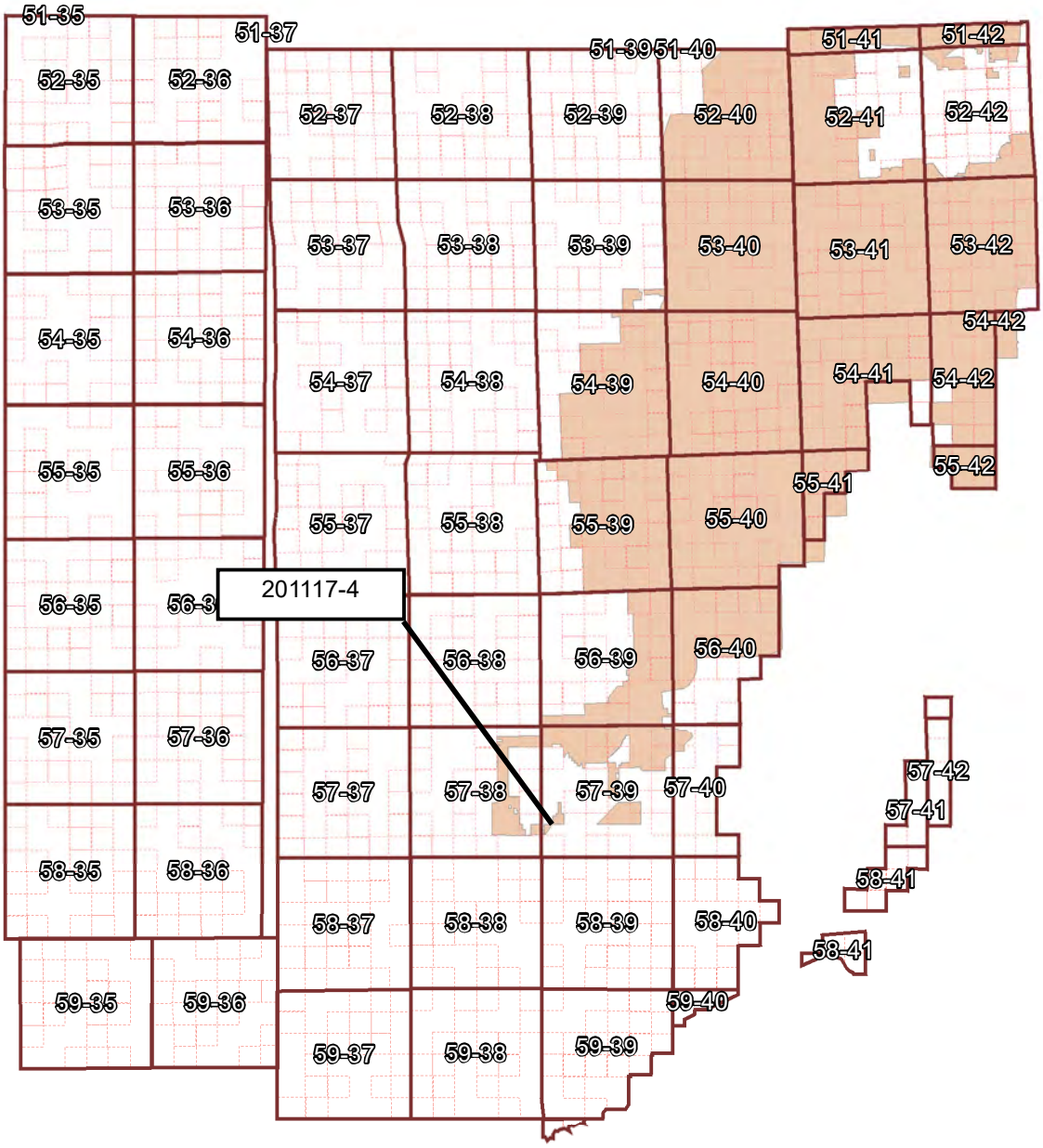
E. Harm to the natural system including damage to habitat for rare or endangered species.

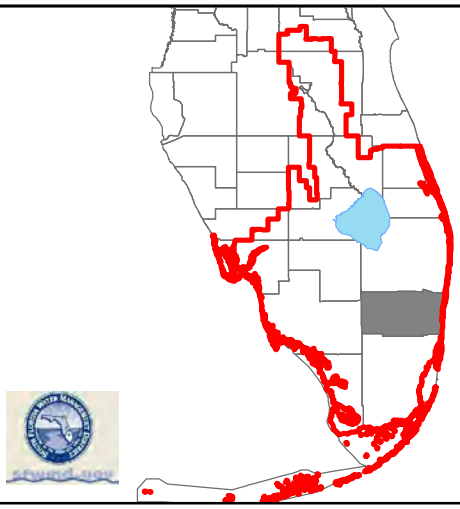
11. The Permittee shall mitigate harm to existing off-site land uses caused by the Permittee's withdrawals, as determined through reference to the conditions for permit issuance. When harm occurs, or is imminent, the District will require the Permittee to modify withdrawal rates or mitigate the harm. Harm as determined through reference to the conditions for permit issuance, includes:

    A. Significant reduction in water levels on the property to the extent that the designed function of the water body and related surface water management improvements are damaged, not including aesthetic values. The designed function of a water body is identified in the original permit or other governmental authorization issued for the construction of the water body. In cases where a permit was not required, the designed function shall be determined based on the purpose for the original construction of the water body (e.g. fill for construction, mining, drainage canal, etc.)

    B. Damage to agriculture, including damage resulting from reduction in soil moisture resulting from consumptive use; or,

    C. Land collapse or subsidence caused by reduction in water levels associated with consumptive use.





MIAMI-DADE COUNTY, FLORIDA

N

Map Date: 2021-12-03

Application No: 201117-4

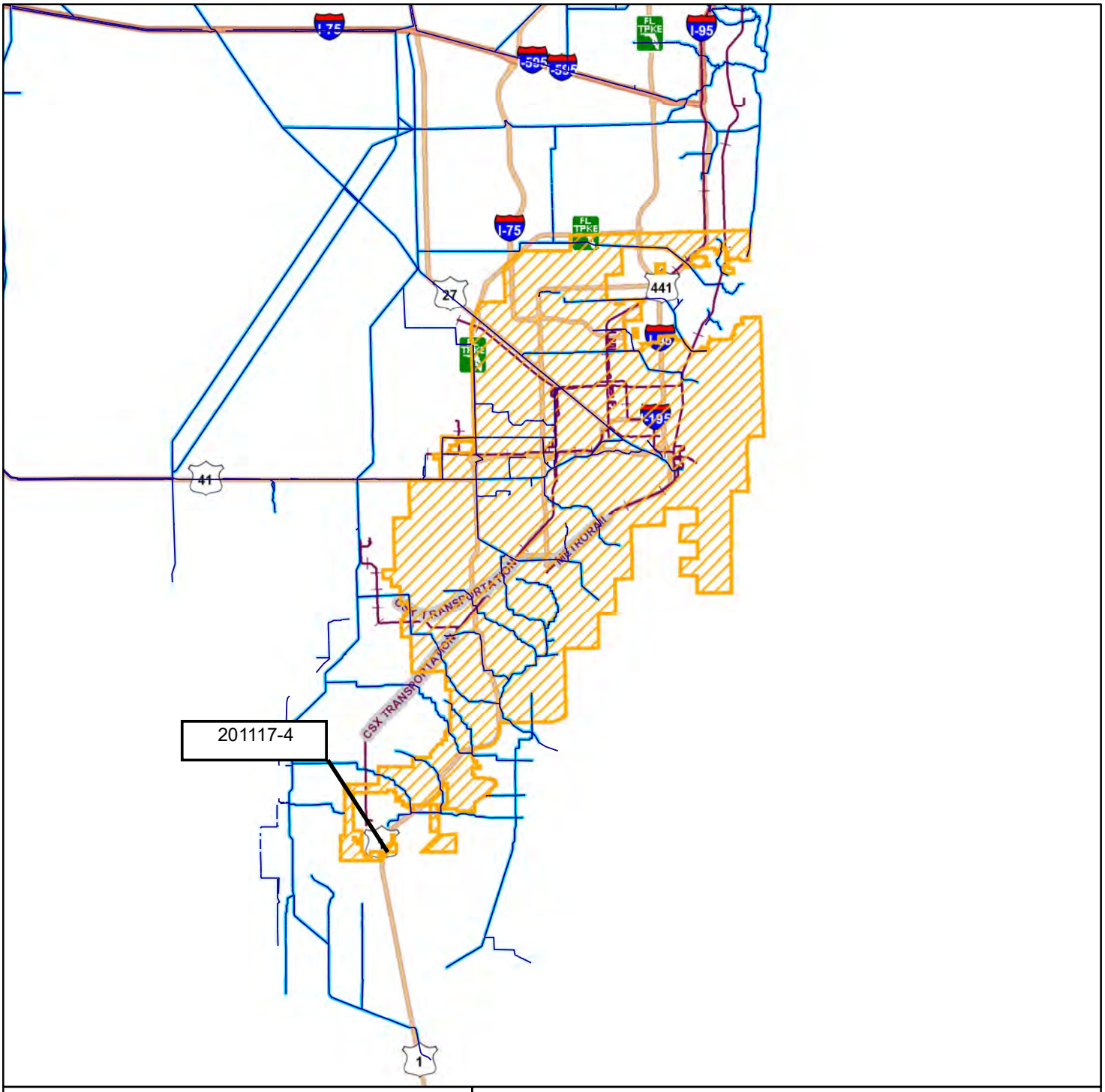
Permit No: 13-00017-W

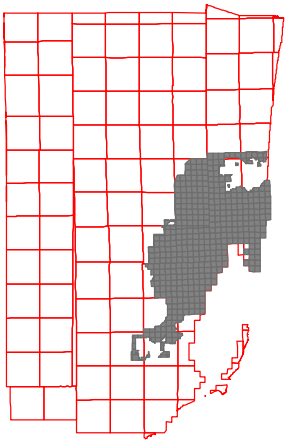
Sec - / Twp 53 / Rge 40

Project Name: MIAMI-DADE CONSOLIDATED P W S

0 10 20 Miles

Exhibit No: 1





Application

MIAMI-DADE COUNTY, FLORIDA

N

Map Date: 2021-12-03

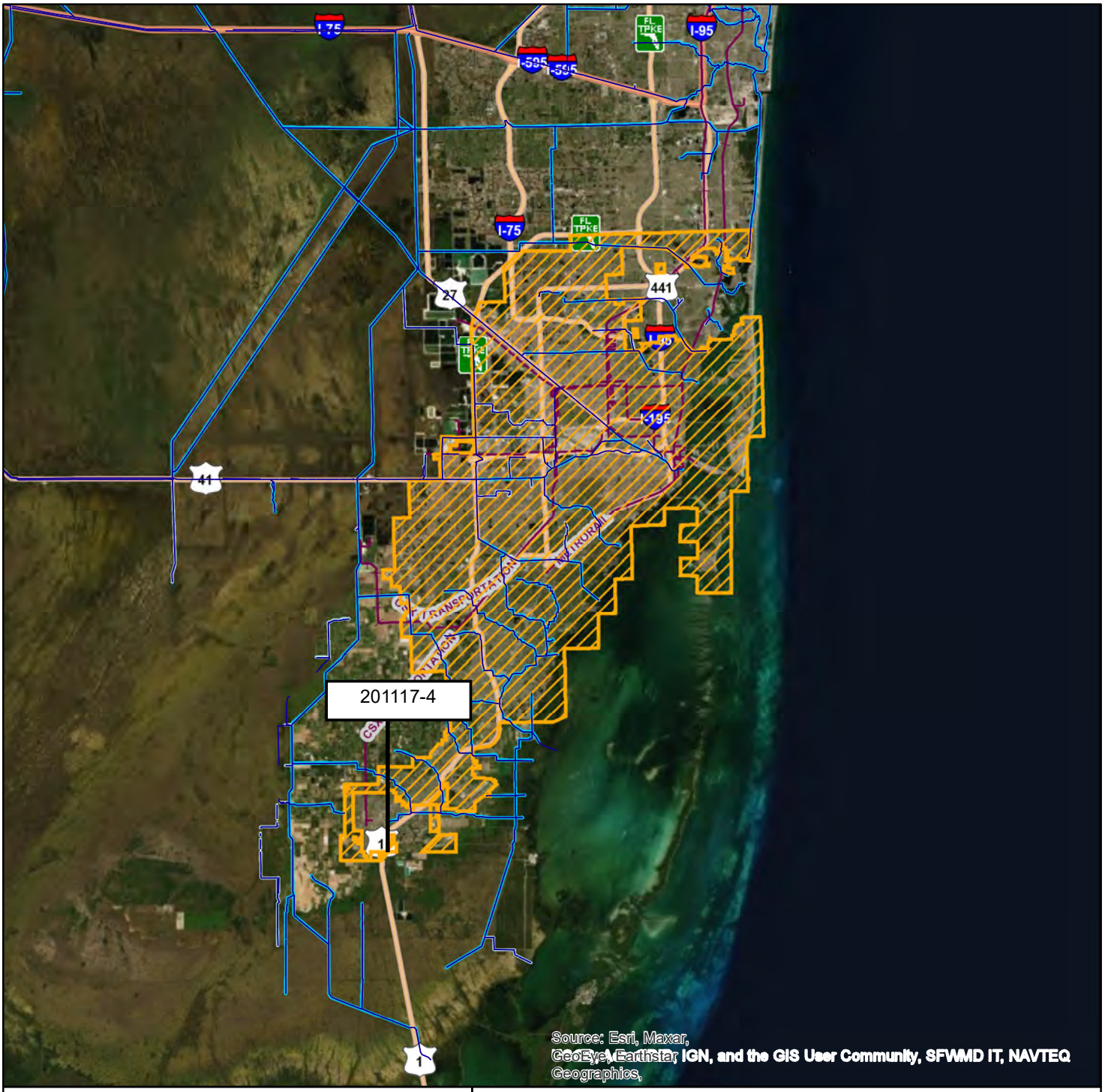
Application No: 201117-4

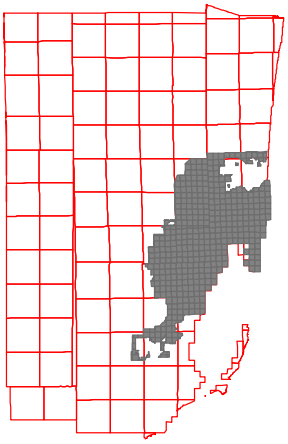
Permit No: 13-00017-W

Sec - / Twp 53 / Rge 40

Project Name: MIAMI-DADE CONSOLIDATED P W S

0 10 20 Miles





Application

MIAMI-DADE COUNTY, FLORIDA

N

Map Date: 2021-12-03

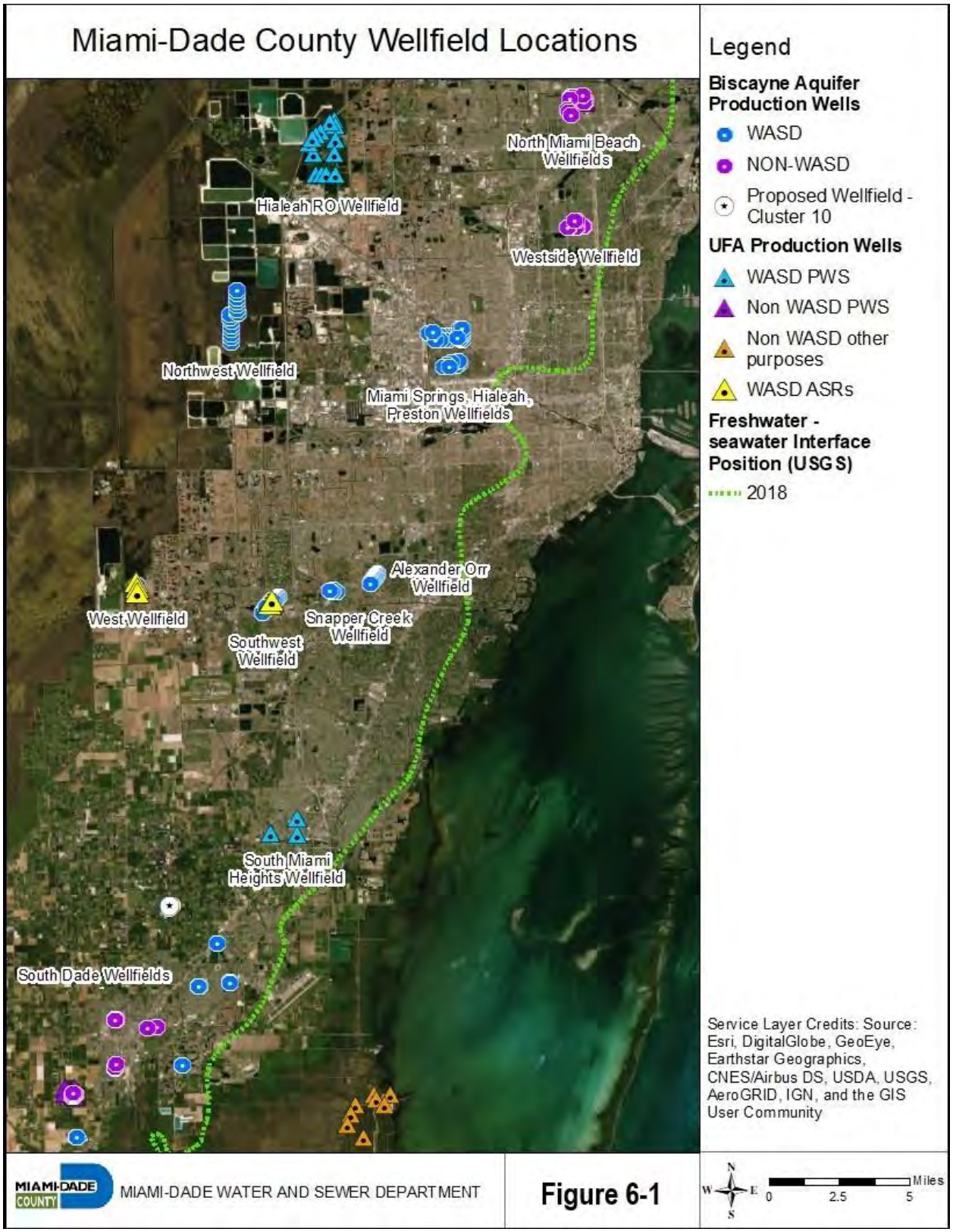
Application No: 201117-4

Permit No: 13-00017-W

Sec - / Twp 53 / Rge 40

Project Name: MIAMI-DADE CONSOLIDATED P W S

0 10 20 Miles


Miami-Dade County Wellfield Locations
Legend
Biscayne Aquifer Production Wells
WASD
NON-WASD
Proposed Wellfield - Cluster 10
UFA Production Wells
WASD PWS
Non WASD PWS
Non WASD other purposes
WASD ASRs
Freshwater - seawater Interface Position (USGS)
2018
North Miami Beach Wellfields
Hialeah RO Wellfield
Westside Wellfield
Northwest Wellfield
Miami Springs, Hialeah, Preston Wellfields
Alexander Orr Wellfield
West Wellfield
Snapper Creek Wellfield
Southwest Wellfield
South Miami Heights Wellfield
South Dade Wellfields
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
MIAMI-DADE COUNTY
MIAMI-DADE WATER AND SEWER DEPARTMENT
Figure 6-1
N
W
E
S
0
2.5
5
Miles

Hialeah-Preston Wellfields
Legend
Biscayne Aquifer Production Wells
WASD
PP3
PP6
PP5
PP2
PP4
PP1
PP7
Hia12
Hia13
Hia11
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
MIAMI-DADE COUNTY
MIAMI-DADE WATER AND SEWER DEPARTMENT
Figure 6-2
N
W
E
S
0
0.03
0.06
Miles

Upper Miami Springs Wellfield
Legend
Biscayne Aquifer Production Wells
WASD
MS23
MS9
MS19
MS18
MS16
MS15
MS10
MS14
MS22
MS21
MS20
MS17
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
MIAMI-DADE COUNTY
MIAMI-DADE WATER AND SEWER DEPARTMENT
N
W
E
S
0
0.1
0.2
Miles

Figure 6-3

Lower Miami Springs Wellfield
Legend
Biscayne Aquifer Production Wells
WASD
MS1
MS2
MS3
MS4
MS5
MS6
MS7
MS8
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
MIAMI-DADE COUNTY
MIAMI-DADE WATER AND SEWER DEPARTMENT
Figure 6-4
N
W
E
S
Miles
0
0.05
0.1

Northwest Wellfield
Legend
Biscayne Aquifer Production Wells
WASD
NW15
NW14
NW13
NW12
NW11
NW10
NW9
NW8
NW7
NW6
NW5
NW4
NW3
NW2
NW1
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
MIAMI-DADE COUNTY
MIAMI-DADE WATER AND SEWER DEPARTMENT
Figure 6-5
N
W
E
S
Miles
0
0.2
0.4

Medley Wellfield
Legend
Biscayne Aquifer Production Wells
WASD
Medley-1
Medley-6
Medley-2
Medley-5
Medley-3
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
MIAMI-DADE COUNTY
MIAMI-DADE WATER AND SEWER DEPARTMENT
Figure 6-6
N
W
E
S
0
0.0125
0.025
Miles

Hialeah RO Wellfield
Legend
UFA Production Wells
WASD PWS
RO5 Hialeah
RO8 Hialeah
RO6 Hialeah
RO9 Hialeah
RO12 Hialeah
RO13 Hialeah
RO7 Hialeah
RO14 Hialeah
RO1 Hialeah
RO11 Hialeah
RO2 Hialeah
RO3 Hialeah
RO4 Hialeah
RO10 Hialeah
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
MIAMI-DADE COUNTY
MIAMI-DADE WATER AND SEWER DEPARTMENT
N
W
E
S
Miles
0
0.125
0.25

Figure 6-7

Alexander Orr Wellfield
Legend
Biscayne Aquifer Production Wells
WASD
AO1
AO2
AO3
AO4
AO5
AO6
AO7
AO8
AO9
AO10
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
MIAMI-DADE COUNTY
MIAMI-DADE WATER AND SEWER DEPARTMENT
Figure 6-8
N
W
E
S
0
0.05
0.1
Miles

Snapper Creek Wellfield
Legend
Biscayne Aquifer Production Wells
WASD
SC22
SC24
SC23
SC21
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
MIAMI-DADE COUNTY
MIAMI-DADE WATER AND SEWER DEPARTMENT
N
W
E
S
0
0.04
0.08
Miles

Figure 6-9

Southwest Wellfield
Legend
Biscayne Aquifer Production Wells
WASD
WASD ASRs
SW11
SW12
SW13
SW14
ASR-4-SW
SW38
SW15
SW16
ASR-5-SW
SW39
SW17
SW18
SW19
SW40
SW20
SW25
SW26
SW27
SW28
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
MIAMI-DADE COUNTY
MIAMI-DADE WATER AND SEWER DEPARTMENT
N
W
E
S
Miles
0
0.05
0.1

Figure 6-10

Legend

Biscayne Aquifer Production Wells

- WASD
- WASD ASRs

Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

MIAMI-DADE COUNTY

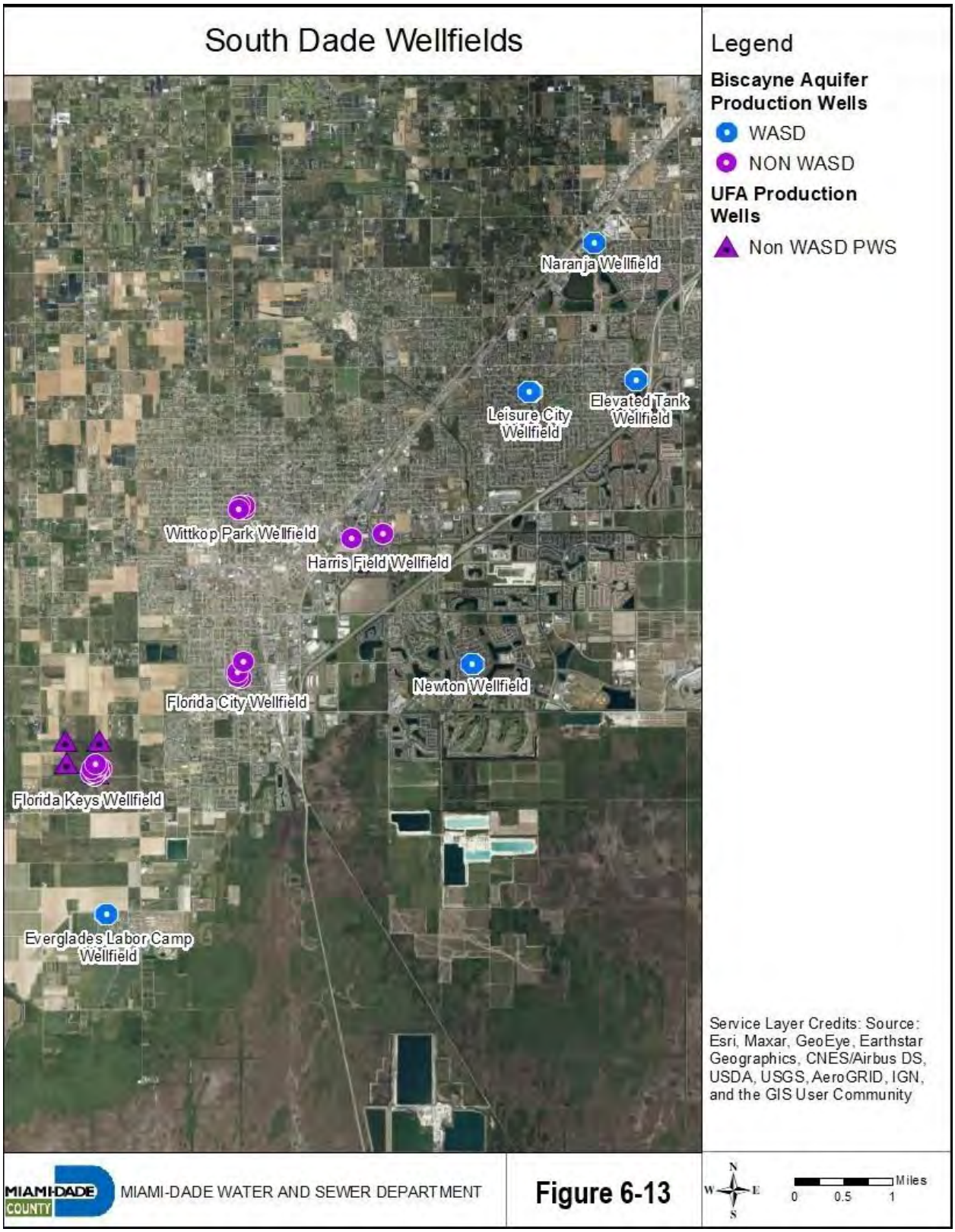
MIAMI-DADE WATER AND SEWER DEPARTMENT

Figure 6-11

N W E S

Miles 0 0.025 0.05

Proposed Wellfield - Cluster 10
Legend
Proposed Cluster 10 Wells Location
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
MIAMI-DADE COUNTY
MIAMI-DADE WATER AND SEWER DEPARTMENT
Figure 6-12
N
W
E
S
0
0.03
0.06
Miles


South Dade Wellfields
Legend
Biscayne Aquifer Production Wells
WASD
NON WASD
UFA Production Wells
Non WASD PWS
Naranja Wellfield
Leisure City Wellfield
Elevated Tank Wellfield
Wittkop Park Wellfield
Harris Field Wellfield
Florida City Wellfield
Newton Wellfield
Florida Keys Wellfield
Everglades Labor Camp Wellfield
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
MIAMI-DADE COUNTY
MIAMI-DADE WATER AND SEWER DEPARTMENT
Figure 6-13
N
W
E
S
Miles
0
0.5
1

Elevated Tank Wellfield
Legend
Biscayne Aquifer Production Wells
WASD
ET1
ET2
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
MIAMI-DADE COUNTY
MIAMI-DADE WATER AND SEWER DEPARTMENT
N
W
E
S
0
0.01
0.02
Miles

Figure 6-14

Everglades Labor Camp Wellfield
Legend
Biscayne Aquifer Production Wells
WASD
EG1R
EG2R
EG3
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
MIAMI-DADE COUNTY
MIAMI-DADE WATER AND SEWER DEPARTMENT
N
W
E
S
Miles
0
0.005
0.01

Figure 6-15

Leisure City Wellfield
Legend
Biscayne Aquifer Production Wells
WASD
LC5
LC4
LC3
LC2
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
MIAMI-DADE COUNTY
MIAMI-DADE WATER AND SEWER DEPARTMENT
Figure 6-16
N
W
E
S
Miles
0
0.005
0.01

Naranja Wellfield
Legend
Biscayne Aquifer Production Wells
WASD
NJ1
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
MIAMI-DADE COUNTY
MIAMI-DADE WATER AND SEWER DEPARTMENT
N
W
E
S
Miles
0
0.0035
0.007

Figure 6-17

Newton Wellfield
Legend
Biscayne Aquifer Production Wells
WASD
NT2
NT1
Service Layer Credits: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
MIAMI-DADE COUNTY
MIAMI-DADE WATER AND SEWER DEPARTMENT
N
W
E
S
0
0.0125
0.025
Miles

Figure 6-18

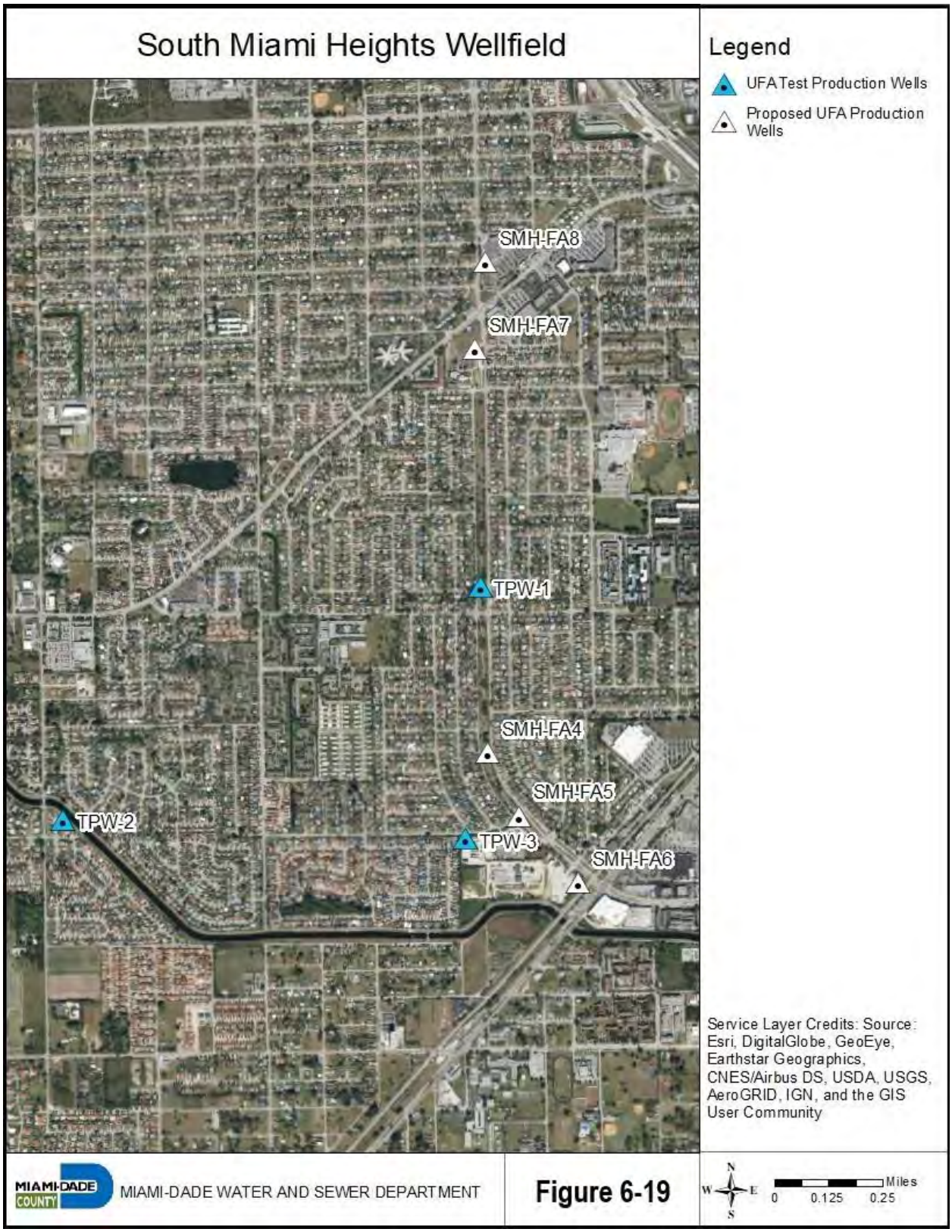

South Miami Heights Wellfield
Legend
UFA Test Production Wells
Proposed UFA Production Wells
SMH-FA8
SMH-FA7
TPW-1
SMH-FA4
SMH-FA5
TPW-2
TPW-3
SMH-FA6
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
MIAMI-DADE COUNTY
MIAMI-DADE WATER AND SEWER DEPARTMENT
N
W
E
S
Miles
0
0.125
0.25

Figure 6-19

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	28261	28262	28263	28264	28265	28268
Name	1 MS Lower	2 MS Lower	3 MS Lower	4 MS Lower	5 MS Lower	6 MS Lower
Map Designator	1 MS Lower	2 MS Lower	3 MS Lower	4 MS Lower	5 MS Lower	6 MS Lower
FLUWID Number						
Well Field	Miami Springs Lower	Miami Springs Lower	Miami Springs Lower	Miami Springs Lower	Miami Springs Lower	Miami Springs Lower
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	14	14	14	14	14	30
Total Depth(feet)	115	115	115	115	115	115
Cased Depth(feet)	80	80	80	80	80	80
Facility Elev. (ft. NGVD)						
Screened Interval						
From	0	0	0	0	0	0
To	0	0	0	0	0	0
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	0	0		0	0	0
Pump Capacity(GPM)	3800	2500	2500	2500	2500	2500
Year Drilled						
Planar Location						
Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	890660	889990	889800	890450	888955	888105
Feet North	539170	538745	539400	539785	539515	539115
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	28266	28267	28269	28280	28271	28272
Name	7 MS Lower	8 MS Lower	9 MS Upper	10 MS Upper	14 MS Upper	15 MS Upper
Map Designator	7 MS Lower	8 MS Lower	9 MS Upper	10 MS Upper	14 MS Upper	15 MS Upper
FLUWID Number						
Well Field	Miami Springs Lower	Miami Springs Lower	Miami Springs Upper	Miami Springs Upper	Miami Springs Upper	Miami Springs Upper
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	14	14	14	14	30	14
Total Depth(feet)	115	115	115	115	115	115
Cased Depth(feet)	80	80	80	80	80	80
Facility Elev. (ft. NGVD)						
Screened Interval						
From	0	0	0	0	0	0
To	0	0	0	0	0	0
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	0	0		0		0
Pump Capacity(GPM)	2500	2500	2500	2500	4170	2500
Year Drilled						
Planar Location						
Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	887545	888575	884630	888960	889520	888430
Feet North	538585	538565	544870	544210	544190	544440
Accounting Method	Flow Meter	Unspecified	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Primary	Primary	Primary	Primary	Primary	Standby
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	28273	28274	28275	28276	28277	28278
Name	16 MS Upper	17 MS Upper	18 MS Upper	19 MS Upper	20 MS Upper	21 MS Upper
Map Designator	16 MS Upper	17 MS Upper	18 MS Upper	19 MS Upper	20 MS Upper	21 MS Upper
FLUWID Number						
Well Field	Miami Springs Upper	Miami Springs Upper	Miami Springs Upper	Miami Springs Upper	Miami Springs Upper	Miami Springs Upper
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	14	14	14	14	14	14
Total Depth(feet)	115	115	115	115	115	115
Cased Depth(feet)	80	80	80	80	80	80
Facility Elev. (ft. NGVD)						
Screened Interval						
From	0	0	0	0	0	0
To	0	0	0	0	0	0
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	0	0	0	0	0	0
Pump Capacity(GPM)	2500	2500	2500	2500	2500	2500
Year Drilled						
Planar Location						
Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	887776	888460	886890	886105	887684	886890
Feet North	544475	543550	544430	544425	543499	543510
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Standby	Primary	Standby	Standby	Primary	Primary
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	28279	28270	28288	28289	28290	28281
Name	22 MS Upper	23 MS Upper	11 Hialeah	12 Hialeah	13 Hialeah	1 Preston
Map Designator	22 MS Upper	23 MS Upper	11 Hialeah	12 Hialeah	13 Hialeah	1 Preston
FLUWID Number						
Well Field	Miami Springs Upper	Miami Springs Upper	Hialeah	Hialeah	Hialeah	Preston
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	14	14	14	14	14	42
Total Depth(feet)	115	115	115	115	115	107
Cased Depth(feet)	80	80	80	80	80	66
Facility Elev. (ft. NGVD)						
Screened Interval						
From	0	0	0	0	0	0
To	0	0	0	0	0	0
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Centrifugal	Turbine
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	0	0				40
Pump Capacity(GPM)	2500	2500	2500	2500	2500	7000
Year Drilled						
Planar Location						
Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	886110	885590	891050	890830	890650	890540
Feet North	543510	545090	543550	544140	543790	544500
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	28282	28283	28284	28285	28286	28287
Name	2 Preston	3 Preston	4 Preston	5 Preston	6 Preston	7 Preston
Map Designator	2 Preston	3 Preston	4 Preston	5 Preston	6 Preston	7 Preston
FLUWID Number						
Well Field	Preston	Preston	Preston	Preston	Preston	Preston
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	42	42	42	42	42	42
Total Depth(feet)	107	107	107	107	107	107
Cased Depth(feet)	66	66	66	66	66	69
Facility Elev. (ft. NGVD)						
Screened Interval						
From	0	0	0	0	0	0
To	0	0	0	0	0	0
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Turbine	Turbine	Turbine	Turbine	Turbine	Turbine
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	40	40	40	40	40	40
Pump Capacity(GPM)	7000	7000	7000	7000	7000	7000
Year Drilled						
Planar Location						
Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	890510	890430	891080	891029	891000	890100
Feet North	545010	544680	544650	545190	545680	544270
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	26330	26331	26332	26304	26306	26309
Name	1 Orr	2 Orr	3 Orr	4 Orr	5 Orr	6 Orr
Map Designator	ORR 1	ORR 2	ORR 3	ORR 4	ORR 5	ORR 6
FLUWID Number						
Well Field	Alexander Orr WF	Alexander Orr WF	Alexander Orr WF	Alexander Orr WF	Alexander Orr WF	Alexander Orr WF
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	16	16	16	16	16	16
Total Depth(feet)	100	100	100	100	100	100
Cased Depth(feet)	40	40	40	40	40	40
Facility Elev. (ft. NGVD)						
Screened Interval						
From	0	0	0	0	0	0
To	0	0	0	0	0	0
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Turbine	Turbine	Turbine	Turbine	Turbine	Turbine
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	4170	4170	4170	4170	4170	4170
Year Drilled						
Planar Location						
Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	875100	875110	875000	874830	874670	874500
Feet North	499520	499640	499430	499250	499070	498880
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	26310	26311	26312	26313	27179	27180
Name	7 Orr	8 Orr	9 Orr	10 Orr	SNPCRK-21	SNPCRK-22
Map Designator	ORR 7	ORR 8	ORR 9	ORR 10	SNPR CRK 21	SNPR CRK 22
FLUWID Number						
Well Field	Alexander Orr WF	Alexander Orr WF	Alexander Orr WF	Alexander Orr WF	Snapper Creek WF	Snapper Creek WF
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	16	16	24	24	24	24
Total Depth(feet)	100	100	100	100	108	108
Cased Depth(feet)	40	40	50	50	50	50
Facility Elev. (ft. NGVD)						
Screened Interval						
From	0	0	0	0	0	0
To	0	0	0	0	0	0
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Turbine	Turbine	Turbine	Turbine	Turbine	Turbine
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	4170	7500	7500	7500	8300	8300
Year Drilled						
Planar Location						
Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	874340	874160	874000	873830	867480	866830
Feet North	498690	498510	498310	498110	496570	496920
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Unspecified
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	27181	27182	26314	26315	26319	27172
Name	SNPCRK-23	SNPCRK-24	11 SW	12 SW	13 SW	14 SW
Map Designator	SNPR CRK 23	SNPR CRK 24	Southwest 11	Southwest 12	Southwest 13	Southwest 14
FLUWID Number						
Well Field	Snapper Creek WF	Snapper Creek WF	Southwest WF	Southwest WF	Southwest WF	Southwest WF
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	24	24	20	20	20	20
Total Depth(feet)	108	108	100	100	100	100
Cased Depth(feet)	50	50	40	40	40	40
Facility Elev. (ft. NGVD)						
Screened Interval						
From	0	0	0	0	0	0
To	0	0	0	0	0	0
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Turbine	Turbine	Turbine	Turbine	Turbine	Turbine
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	8300	8300	4900	4900	4900	4900
Year Drilled						
Planar Location						
Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	866640	866310	856559	856380	856180	855960
Feet North	496560	496750	496044	495440	495215	494980
Accounting Method	Unspecified	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	27173	27174	27175	27176	27177	27178
Name	15 SW	16 SW	17 SW	18 SW	19 SW	20 SW
Map Designator	Southwest 15	Southwest 16	Southwest 17	Southwest 18	Southwest 19	Southwest 20
FLUWID Number						
Well Field	Southwest WF	Southwest WF	Southwest WF	Southwest WF	Southwest WF	Southwest WF
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	20	20	24	24	24	24
Total Depth(feet)	100	100	100	100	100	100
Cased Depth(feet)	40	40	35	35	35	35
Facility Elev. (ft. NGVD)						
Screened Interval						
From	0	0	0	0	0	0
To	0	0	0	0	0	0
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Turbine	Turbine	Turbine	Turbine	Turbine	Turbine
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	4900	4900	4900	4900	4900	4900
Year Drilled						
Planar Location						
Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	855740	855470	855280	855080	855850	854640
Feet North	494750	494440	494280	494050	493810	493590
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	27183	27184	27185	27186	27192	27191
Name	25 SW	26 SW	27 SW	28 SW	32 SW	33 SW
Map Designator	Southwest 25	Southwest 26	Southwest 27	Southwest 28	32 SW	33 SW
FLUWID Number						
Well Field	Southwest WF	Southwest WF	Southwest WF	Southwest WF	Southwest WF	Southwest WF
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	24	24	24	24	48	48
Total Depth(feet)	104	104	104	104	88	88
Cased Depth(feet)	54	54	54	54	33	33
Facility Elev. (ft. NGVD)						
Screened Interval						
From	0	0	0	0	0	0
To	0	0	0	0	0	0
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Turbine	Turbine	Turbine	Turbine	Turbine	Turbine
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)						0
Pump Capacity(GPM)	6940	6940	6940	6940	7500	7500
Year Drilled						
Planar Location						
Source	REVIEWER	Migrate	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	854400	854160	853920	853830	855470	855970
Feet North	493320	493060	492810	492801	495900	494350
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Unspecified
Use Status	Primary	Primary	Primary	Primary	Standby	Standby
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	27190	27187	27188	27189	27193	27195
Name	34 SW	29 W	30 W	31 W	ASR/Blending 1W	ASR/Blending 2W
Map Designator	34 SW	29 W	30 W	31 W	ASR 1W	ASR 2W
FLUWID Number						
Well Field	Southwest WF	West WF	West WF	West WF	West WF	West WF
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	48	24	24	24	30	30
Total Depth(feet)	88	70	70	70	1300	1250
Cased Depth(feet)	33	35	35	35	850	845
Facility Elev. (ft. NGVD)						
Screened Interval						
From	0	0	0	0	0	0
To	0	0	0	0	0	0
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Turbine	Turbine	Turbine	Turbine	Unspecified	Unspecified
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	7500	6945	3470	6945	3500	3500
Year Drilled						
Planar Location						
Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	854350	830235	830220	830210	830190	830100
Feet North	493690	496590	497150	497700	496430	496700
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Standby	Primary	Primary	Standby	Primary	Primary
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	27194	27196	27197	28291	28292	28293
Name	ASR/Blending 3W	ASR/Blending 4SW	ASR/Blending 5SW	1 NWWF	2 NWWF	3 NWWF
Map Designator	ASR 3W	ASR 4SW	ASR 5SW	1 NWWF	2 NWWF	3 NWWF
FLUWID Number						
Well Field	West WF	Southwest WF	Southwest WF	Northwest WF	Northwest WF	Northwest WF
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	30	30	30	48	48	48
Total Depth(feet)	1210	1200	1200	80	80	80
Cased Depth(feet)	835	765	760	46	46	46
Facility Elev. (ft. NGVD)						
Screened Interval						
From	0	0	0	0	0	0
To	0	0	0	0	0	0
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Unspecified	Unspecified	Unspecified	Turbine	Turbine	Turbine
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)				40	40	40
Pump Capacity(GPM)	3500	3500	3500	10420	10420	10420
Year Drilled						
Planar Location						
Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	830160	855386	854880	847729	847805	847767
Feet North	497420	495060	494320	543166	543988	544714
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Primary	Standby	Standby	Primary	Primary	Primary
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	28294	28295	28296	28297	28298	28299
Name	4 NWWF	5 NWWF	6 NWWF	7 NWWF	8 NWWF	9 NWWF
Map Designator	4 NWWF	5 NWWF	6 NWWF	7 NWWF	8 NWWF	9 NWWF
FLUWID Number						
Well Field	Northwest WF	Northwest WF	Northwest WF	Northwest WF	Northwest WF	Northwest WF
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	48	48	48	48	48	48
Total Depth(feet)	80	80	80	80	80	80
Cased Depth(feet)	46	46	46	46	46	46
Facility Elev. (ft. NGVD)						
Screened Interval						
From	0	0	0	0	0	0
To	0	0	0	0	0	0
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Turbine	Turbine	Turbine	Turbine	Turbine	Turbine
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	40	40	40	40	40	40
Pump Capacity(GPM)	10420	10416.67	10420	10420	10420	10420
Year Drilled						
Planar Location						
Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	847747	847757	847705	847685	847664	849022
Feet North	545498	546203	546981	547728	548464	548516
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	28300	28301	28302	28303	28304	28305
Name	10 NWWF	11 NWWF	12 NWWF	13 NWWF	14 NWWF	15 NWWF
Map Designator	10 NWWF	11 NWWF	12 NWWF	13 NWWF	14 NWWF	15 NWWF
FLUWID Number						
Well Field	Northwest WF	Northwest WF	Northwest WF	Northwest WF	Northwest WF	Northwest WF
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	40	48	48	40	40	40
Total Depth(feet)	100	80	80	100	100	100
Cased Depth(feet)	57	46	46	57	57	57
Facility Elev. (ft. NGVD)						
Screened Interval						
From	0	0	0	0	0	0
To	0	0	0	0	0	0
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Turbine	Turbine	Turbine	Turbine	Turbine	Turbine
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	40	40	40	40	40	40
Pump Capacity(GPM)	10420	10420	10420	10420	10420	10420
Year Drilled						
Planar Location						
Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	848971	848960	848929	848877	848877	848867
Feet North	549252	550030	550777	551492	552260	553017
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	217680	217681	217682	217684	217686	217724
Name	1 Medley	2 Medley	3 Medley	5 Medley	6 Medley	RO1 Hialeah
Map Designator	Medley - 1	Medley - 2	Medley - 3	Medley - 5	Medley - 6	Hialeah 1 RO
FLUWID Number						
Well Field	Medley WF	Medley WF	Medley WF	Medley WF	Medley WF	Hialeah RO WTP
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	42	42	42	42	42	15
Total Depth(feet)	68	68	68	68	68	1490
Cased Depth(feet)	60	54	54	60	54	1150
Facility Elev. (ft. NGVD)						
Screened Interval						
From						
To						
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Turbine	Turbine	Turbine	Turbine	Turbine	Turbine
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)						155
Pump Capacity(GPM)	10000	8500	8500	8500	10000	1400
Year Drilled			1975			
Planar Location						
Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	881370	881370	881260	880830	880820	863270
Feet North	548300	548300	547330	547620	548070	578595
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Standby	Standby	Standby	Standby	Standby	Primary
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply Monitor
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Upper Floridan Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	217725	217726	217727	217728	217730	217731
Name	RO2 Hialeah	RO3 Hialeah	RO4 Hialeah	RO5 Hialeah	RO6 Hialeah	RO7 Hialeah
Map Designator	Hialeah 2 RO	Hialeah 3 RO	Hialeah 4 RO	Hialeah 5 RO	Hialeah 6 RO	Hialeah 7 RO
FLUWID Number						
Well Field	Hialeah RO WTP	Hialeah RO WTP	Hialeah RO WTP	Hialeah RO WTP	Hialeah RO WTP	Hialeah RO WTP
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	17	17	17	17	17	17
Total Depth(feet)	1490	1490	1490	1490	1490	1490
Cased Depth(feet)	1080	1080	1080	1080	1080	1080
Facility Elev. (ft. NGVD)						
Screened Interval						
From						
To						
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Turbine	Turbine	Turbine	Turbine	Turbine	Turbine
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	155	155	155			
Pump Capacity(GPM)	1400	1400	1400	1400	1400	1400
Year Drilled						
Planar Location						
Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	863450	864770	865950	866950	866990	867085
Feet North	574835	574835	574835	584875	583590	581265
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Primary	Primary	Primary	Primary	Primary	Standby
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply Monitor
Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	257400	257401	257402	257403	257404	257405
Name	RO8 Hialeah	RO9 Hialeah	RO10 Hialeah	RO11 Hialeah	RO12 Hialeah	RO13 Hialeah
Map Designator	Hialeah 8 RO	Hialeah 9 RO	Hialeah 10 RO	Hialeah 11 RO	Hialeah 12 RO	Hialeah 13 RO
FLUWID Number						
Well Field	Hialeah RO WTP	Hialeah RO WTP	Hialeah RO WTP	Hialeah RO WTP	Hialeah RO WTP	Hialeah RO WTP
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	17	17	17	17	17	17
Total Depth(feet)	1502	1500	1490	1490	1501	1522
Cased Depth(feet)	1090	1090	1080	1080	1090	1090
Facility Elev. (ft. NGVD)						
Screened Interval						
From						
To						
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Turbine	Turbine	Turbine	Turbine	Turbine	Turbine
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	155	155	155	155	155	155
Pump Capacity(GPM)	1400	1400	1400	1400	1400	1400
Year Drilled						
Planar Location						
Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	866240	865035	867410	867175	864485	863250
Feet North	584315	583230	574835	578665	582690	581590
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	257406	128166	128168	23821	23822	23823
Name	RO14 Hialeah	EVRGL 1	EVRGL 2	EVRGL 3	LC 2	LC 3
Map Designator	Hialeah 14 RO	EVERGLADES 1	EVERGLADES 2	EVERGLADES 3	LEISURE CITY 2	LEISURE CITY 3
FLUWID Number						
Well Field	Hialeah RO WTP	Everglades Labor	Everglades Labor	Everglades Labor	Leisure City WF	Leisure City WF
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	17	18	18	18	6	12
Total Depth(feet)	1490	55	55	50	30	35
Cased Depth(feet)	1080	45	42	40	25	30
Facility Elev. (ft. NGVD)						
Screened Interval						
From				0	0	0
To				0	0	0
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Turbine	Turbine	Turbine	Turbine	Turbine	Turbine
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)		38	38	38	22	27
Pump Capacity(GPM)	1400	1500	1500	500	400	1200
Year Drilled						
Planar Location						
Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	862450	818850	818880	818905	841830	841825
Feet North	580860	394500	394500	394500	422680	422746
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Primary	Primary	Standby	Primary	Primary	Primary
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Upper Floridan Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	23824	23825	23826	128172	27411	27407
Name	LC 4	LC 5	ET 1	ET 2	NJ 1	NWTN 1
Map Designator	LEISURE CITY 4	LEISURE CITY 5	ELEVATED TANK 1	ELEVATED TANK 2	NARANJA 1	NEWTON 1
FLUWID Number						
Well Field	Leisure City WF	Leisure City WF	Elevated Tank WF	Elevated Tank WF	Naranja Lakes	Newton WF
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	12	12	12	16	12	18
Total Depth(feet)	35	40	40	50	40	65
Cased Depth(feet)	30	35	35	40	35	50
Facility Elev. (ft. NGVD)						
Screened Interval						
From	0	0	0		0	0
To	0	0	0		0	0
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Turbine	Turbine	Turbine	Turbine	Turbine	Turbine
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	-27	27	37	37	32	45
Pump Capacity(GPM)	800	1600	1600	1600	800	1500
Year Drilled						
Planar Location						
Source	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER	REVIEWER
Feet East	841770	841740	847490	847500	845240	838720
Feet North	422730	422725	423470	423360	430800	408020
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Primary	Primary	Primary	Standby	Primary	Primary
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	27408	261790	261791	261792	261793	261794
Name	NWTN 2	SMH-F1	SMH-F2	SMH-F3	SMH-F4	SMH-F5
Map Designator	NEWTON 2	SMH-FA1	SMH-FA2	SMH-FA3	SMH-FA4	SMH-FA5
FLUWID Number						
Well Field	Newton WF	South Miami Heights	South Miami Heights	South Miami Heights	South Miami Heights	South Miami Heights
Existing/Proposed	E	P	P	P	P	P
Well Diameter(Inches)	18	24	24	24	24	24
Total Depth(feet)	66	1200	1200	1200	1200	1200
Cased Depth(feet)	53	1100	1100	1100	1100	1100
Facility Elev. (ft. NGVD)						
Screened Interval						
From	0					
To	0					
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Turbine	Submersible	Submersible	Submersible	Submersible	Submersible
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)	43					
Pump Capacity(GPM)	1500	2430	2430	2430	2430	2430
Year Drilled						
Planar Location						
Source	REVIEWER	REVIEWER	REVIEWER		REVIEWER	REVIEWER
Feet East	839675	860300	860315	860315	860350	860785
Feet North	408020	455490	454555	453205	452090	451310
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply Monitor	Public Water Supply	Public Water Supply
Aquifer	Biscayne Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	261795	262633	262635	286291	286292	286293
Name	SMH-F6	SMH-F7	SMH-F8	Cluster 10-1	Cluster 10-2	Cluster 10-3
Map Designator	SMH-FA6	SMH-FA7	SMH-FA8	Cluster 10-1	Cluster 10-2	Cluster 10-3
FLUWID Number						
Well Field	South Miami Heights	South Miami Heights	South Miami Heights	Cluster 10 WF	Cluster 10 WF	Cluster 10 WF
Existing/Proposed	P	P	P	P	P	P
Well Diameter(Inches)	24	24	24	24	24	24
Total Depth(feet)	1200	1200	1200	70	70	70
Cased Depth(feet)	1100	1100	1100	35	35	35
Facility Elev. (ft. NGVD)						
Screened Interval						
From						
To						
Pumped Or Flowing	P	P	P	P	P	P
Pump Type	Submersible	Submersible	Submersible	Turbine	Turbine	Turbine
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	2430	2430	2430	6945	6945	6945
Year Drilled						
Planar Location						
Source	REVIEWER					
Feet East	861435	860256	860256	836644	836375	836372
Feet North	450545	457056	458125	437942	437520	437898
Accounting Method	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter	Flow Meter
Use Status	Primary	Primary	Primary	Primary	Primary	Primary
Water Use Type	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply	Public Water Supply
Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	217858	217859	217860	217861	257879	217863
Name	AO-6N	AO-8C	SC-1N	SC-6N	SW-2W	SW-7W
Map Designator	AO-6N	AO-8C	SC-1N	SC-6N	SW-2W	SW-7W
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)						
Total Depth(feet)	60	60	60	60	60	60
Cased Depth(feet)	55	55	55	55	60	55
Facility Elev. (ft. NGVD)						
Screened Interval						
From						
To						
Pumped Or Flowing						
Pump Type	None	None	None	None	Unspecified	None
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	0	0	0	0	0	0
Year Drilled						
Planar Location						
Source						
Feet East	871935	876599	866517	867733	852444	852849
Feet North	497928	503302	498298	494945	496094	491131
Accounting Method	None	None	None	None	None	None
Use Status	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Use Type	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	217869	217870	217878	217877	217882	217879
Name	WWF-21S	WWF-755	NW-6F	NW-8D	NW-19C	WASD-1C
Map Designator	WWF-21S	WWF-755	NW-6F	NW-8D	NW-19C	WASD-1C
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)						
Total Depth(feet)	48	55	60	60	50	40
Cased Depth(feet)	43	50	55	55	45	35
Facility Elev. (ft. NGVD)						
Screened Interval						
From						
To						
Pumped Or Flowing						
Pump Type	None	None	None	None	None	None
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	0	0	0	0	0	0
Year Drilled						
Planar Location						
Source						
Feet East	830122	833267	850785	855531	863277	848891
Feet North	496604	496314	543261	548212	548736	553433
Accounting Method	None	None	None	None	None	None
Use Status	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Use Type	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	137231	257889	257886	217851	257878	257885
Name	F-45	F-279	G-548	G-551	G-553	G-571
Map Designator	F-45	F-279	G-548	G-551	G-553	G-571
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)						
Total Depth(feet)	84.9	117	97.3	80	91	94.5
Cased Depth(feet)		113.5	91.4	71	79	94.5
Facility Elev. (ft. NGVD)						
Screened Interval						
From						
To						
Pumped Or Flowing						
Pump Type	None	Unspecified	Unspecified	None	Unspecified	Unspecified
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	0	0	0	0	0	0
Year Drilled						
Planar Location						
Source	REVIEWER					
Feet East	918017	923283	894029	855096	874041	893396
Feet North	544328	565633	539211	494095	479217	537785
Accounting Method	None	None	None	None	None	None
Use Status	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Use Type	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	137249	137251	257884	257883	217716	217853
Name	G-894	G-896	G-901	G-939	G-1009B	G-1074B
Map Designator	G-894	G-896	G-901	G-939	G-1009B	G-1074B
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	2	2				
Total Depth(feet)	76	74	96	60	100	39
Cased Depth(feet)	74.5	60	94.8	57		17
Facility Elev. (ft. NGVD)						
Screened Interval						
From						
To						
Pumped Or Flowing						
Pump Type	None	None	Unspecified	Unspecified	None	None
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	0	0	0	0	0	0
Year Drilled						
Planar Location						
Source	DIGITIZED	DIGITIZED			REVIEWER	
Feet East	924897	892989	889410	883435	887960	824944
Feet North	569308	492088	497387	466158	491810	498493
Accounting Method	None	None	None	None	None	None
Use Status	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Use Type	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	137233	137236	137237	137240	217715	137241
Name	G-1180	G-1351	G-1354	G-3162	G-3224	G-3229
Map Designator	G-1180	G-1351	G-1354	G-3162	G-3224	G-3229
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	9	2	2	2		
Total Depth(feet)	67	103	104	92	95.5	85
Cased Depth(feet)		100	91	82	93.5	
Facility Elev. (ft. NGVD)						
Screened Interval						
From						
To						
Pumped Or Flowing						
Pump Type	None	None	None	None	None	None
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	0	0	0	0	0	0
Year Drilled						
Planar Location						
Source	DIGITIZED	REVIEWER	DIGITIZED	DIGITIZED	REVIEWER	DIGITIZED
Feet East	854786	896137	897679	857302.951	916450	897343
Feet North	423247	535114	537142	433858.484	560230	515333
Accounting Method	None	None	None	None	None	None
Use Status	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Use Type	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	137242	217872	217873	257881	217713	217864
Name	G-3250	G-3253	G-3259A	G-3313C	G-3313E	G-3551
Map Designator	G-3250	G-3253	G-3259A	G-3313C	G-3313E	G-3551
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	2					
Total Depth(feet)	116	34.5	60	110	114	18.3
Cased Depth(feet)	106	18		107	32	13.3
Facility Elev. (ft. NGVD)						
Screened Interval						
From						
To						
Pumped Or Flowing						
Pump Type	None	None	None	Unspecified	None	None
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	0	0	0	0	0	0
Year Drilled						
Planar Location						
Source	DIGITIZED				REVIEWER	
Feet East	889597	848470	853204	886586	886590	822180
Feet North	544468	548281	548219	476178	476160	496766
Accounting Method	None	None	None	None	None	None
Use Status	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Use Type	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	217865	217866	217855	217867	217856	217857
Name	G-3553	G-3554	G-3555	G-3556	G-3563	G-3565
Map Designator	G-3553	G-3554	G-3555	G-3556	G-3563	G-3565
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)						
Total Depth(feet)	19.9	20	19	19.1	18	19
Cased Depth(feet)	14.9	15	14	14.1	13	14
Facility Elev. (ft. NGVD)						
Screened Interval						
From						
To						
Pumped Or Flowing						
Pump Type	None	None	None	None	None	None
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	0	0	0	0	0	0
Year Drilled						
Planar Location						
Source						
Feet East	829849	833159	834977	830406	872346	852082
Feet North	496216	496238	492107	498278	507267	498927
Accounting Method	None	None	None	None	None	None
Use Status	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Use Type	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	217874	217868	286383	217707	217703	217875
Name	G-3567	G-3577	G-3601-S (replacemen	G-3606	G-3611	G-3676
Map Designator	G-3567	G-3577	G-3601-S	G-3606	G-3611	G-3676
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)			2			
Total Depth(feet)	18.7	8	80	120	100	33
Cased Depth(feet)	13.7	0	70	115	95	23
Facility Elev. (ft. NGVD)			6.83			
Screened Interval						
From						
To						
Pumped Or Flowing						
Pump Type	None	None	None	None	None	None
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	0	0	0	0	0	0
Year Drilled			2016			
Planar Location						
Source			REVIEWER	REVIEWER	REVIEWER	
Feet East	841565	820631	920867	888440	882510	845381
Feet North	596563	497721	570228	507460	467960	529396
Accounting Method	None	None	None	None	None	None
Use Status	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Use Type	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	217880	217944	217876	257890	257891	257892
Name	G-3760	G-3761	G-3818	G-3885	G-3886	G-3887
Map Designator	G-3760	G-3761	G-3818	G-3885	G-3886	G-3887
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)		8		2	2	2
Total Depth(feet)	72.7	16.3	20	107	109	134
Cased Depth(feet)	70.7		15	76	86	80
Facility Elev. (ft. NGVD)				6.19		
Screened Interval						
From				76	86	80
To				81	91	85
Pumped Or Flowing						
Pump Type	None	None	None	Unspecified	None	None
Pump Int. Elev.						
Feet (NGVD)					9.54	9.7
Feet (BLS)						
Pump Capacity(GPM)	0	0	0	0	0	0
Year Drilled						
Planar Location						
Source						
Feet East	842356	842339	836580	863870	876430	888022
Feet North	548457	548452	549140	441922	457549	481537
Accounting Method	None	None	None	None	None	None
Use Status	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Use Type	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Aquifer	Biscayne Aquifer	Water Table Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	257893	217883	217884	217885	217887	217886
Name	G-3888	G-3897	G-3898	G-3899	G-3900	G-3901
Map Designator	G-3888	G-3897	G-3898	G-3899	G-3900	G-3901
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	2	6	6	6	6	6
Total Depth(feet)	149	22.5	22.8	20.5	22	22.3
Cased Depth(feet)	103.5	22.5	22.8	20.5	22	22.3
Facility Elev. (ft. NGVD)						
Screened Interval						
From	103.5					
To	113.5					
Pumped Or Flowing						
Pump Type	None	None	None	None	None	None
Pump Int. Elev.						
Feet (NGVD)	13.67					
Feet (BLS)						
Pump Capacity(GPM)	0	0	0	0	0	0
Year Drilled						
Planar Location						
Source		APPLICANT	APPLICANT	APPLICANT	APPLICANT	APPLICANT
Feet East	903086	847536	828900	861418	838647	850586
Feet North	519784	483700	495915	450646	407718	394645
Accounting Method	None	None	None	None	None	None
Use Status	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Use Type	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	257895	257896	257897	217829	286359	217831
Name	G-3947	G-3948	G-3949	FA-3N NDWWTP	FA-17	ASR MW-1 (WEST)
Map Designator	G-3947	G-3948	G-3949	FA-3N NDWWTP	FA-17	ASR MW-1 (WEST)
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	P	E
Well Diameter(Inches)					14	
Total Depth(feet)	230	279		1510	1085	1396
Cased Depth(feet)	200			1410	985	1350
Facility Elev. (ft. NGVD)						
Screened Interval						
From						855
To						1010
Pumped Or Flowing				F		
Pump Type	None	None	Unspecified	None	None	None
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	0	0	0	0	0	0
Year Drilled						
Planar Location						
Source						
Feet East	915184	926769	930332	936511	871475	829113
Feet North	546997	577670	591728	576823	443191	497139
Accounting Method	None	None	None	None	None	None
Use Status	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Use Type	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Upper Floridan Aquifer	Lower Floridan Aquifer	Upper Floridan Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	217832	217833	286377	286378	268268	265515
Name	ASR MW-1 (SW)	CHI SDWWTP	HIA-DZMW-1-S (Hiale	HIA-DZMW-1-D (Hiale	G-3913	NW-3AR (replaces NW-
Map Designator	ASR MW-1 (SW)	CHI SDWWTP	HIA-DZMW-1-S	HIA-DZMW-1-D	G-3913	NW-3AR
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)			12.72	6.625	4	
Total Depth(feet)	1200	1500	1950	2260	74	88
Cased Depth(feet)	1110	1400		2190	63.5	83
Facility Elev. (ft. NGVD)						
Screened Interval						
From	845	1000	1900	2190		
To	900	1100	1950	2260		
Pumped Or Flowing	F	F				
Pump Type	None	None	None	None	None	None
Pump Int. Elev.						
Feet (NGVD)					7.25	
Feet (BLS)						
Pump Capacity(GPM)	0	0	0	0	0	0
Year Drilled			2010	2010	2010	
Planar Location						
Source					APPLICANT	
Feet East	854233	868422	863903	863903	866757.441	841714
Feet North	493006	447994	578708	578708	496754.022	562395
Accounting Method	None	None	None	None	None	None
Use Status	Monitor	Monitor	Monitor	Monitor	Primary	Monitor
Water Use Type	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer	Lower Floridan Aquifer	Lower Floridan Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	286380	286381	286382	286360	286364	286367
Name	SMHDZMW-1-S (South	SMHDZMW-1-D (South	G-3967	G-3966	G-3964	G-3965
Map Designator	SMHDZMW-1-S	SMHDZMW-1-D	G-3967	G-3966	G-3964	G-3965
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	16	6.625	2	2	2	2
Total Depth(feet)	1821	1821	46	111	189	136
Cased Depth(feet)	1750	1750	36	107	130	119
Facility Elev. (ft. NGVD)	12.03	12.03	7.04	6.74	7.04	9.5
Screened Interval						
From			36	72	92	94
To			46	77	102	99
Pumped Or Flowing						
Pump Type	None	None	None	None	None	None
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	0	0	0	0	0	0
Year Drilled	2018	2018	2014	2014	2014	2014
Planar Location						
Source						
Feet East	861145	861145	867244	845350.919	898034	894957
Feet North	450548	450548	446237	408186	536114	515507
Accounting Method	None	None	None	None	None	None
Use Status	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Use Type	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Aquifer	Upper Floridan Aquifer	Upper Floridan Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	286368	286369	286370	286371	286372	286358
Name	G-3968	G-3969	G-3996	G-3997	G-3998	G-3999
Map Designator	G-3968	G-3969	G-3996	G-3997	G-3998	G-3999
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	E	E
Well Diameter(Inches)	2	2	2	2	2	2
Total Depth(feet)	48	48	140	118	110.3	110
Cased Depth(feet)	48	48	130.2	118	110.3	106.3
Facility Elev. (ft. NGVD)	6.34	10.46	12.84	12.84	3.78	4.03
Screened Interval						
From	35	35	100.2	73	65	66
To	45	45	105.2	83	75	76
Pumped Or Flowing						
Pump Type	None	None	None	None	None	None
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	0	0	0	0	0	0
Year Drilled	2014	2014	2018	2017	2017	2018
Planar Location						
Source						
Feet East	860989	860062	888429	847532	842231.883	842290
Feet North	450386	450030	483993	413581	402727	394671
Accounting Method	None	None	None	None	None	None
Use Status	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Use Type	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

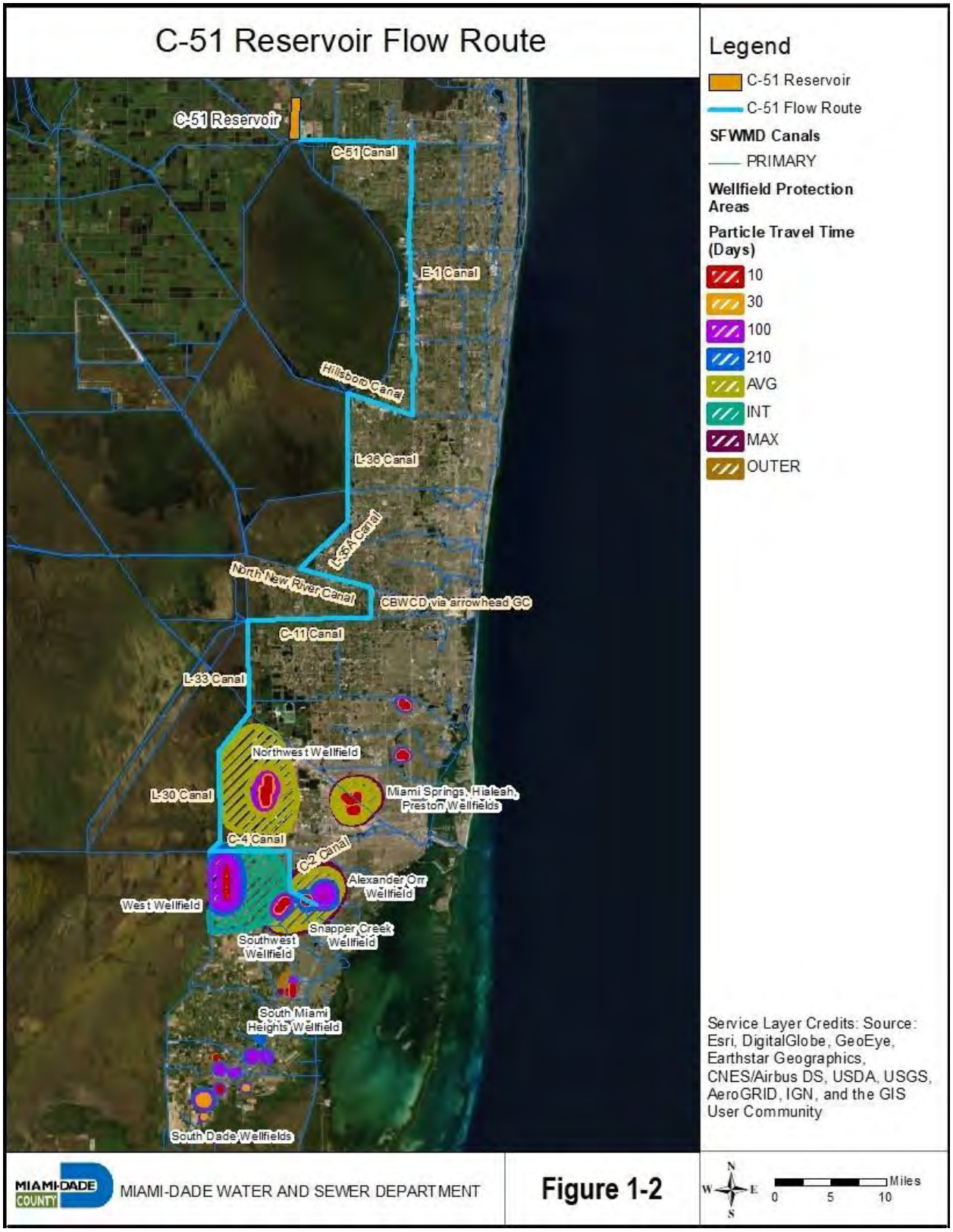
Application Number: **201117-4**

Well ID	286373	286374	286375	286376	286355	289062
Name	G-5004 (SF17-4)	G-5005 (SF18-1)	G-5006 (SF18-4)	G-5007 (SF18-6)	G-354R	Bird Drive MW-1
Map Designator	G-5004 (SF17-4)	G-5005 (SF18-1)	G-5006 (SF18-4)	G-5007 (SF18-6)	G-354R	Bird Drive MW-1
FLUWID Number						
Well Field						
Existing/Proposed	E	E	E	E	P	P
Well Diameter(Inches)	2	2	2	2		2
Total Depth(feet)	100	180	205	205	90.2	20
Cased Depth(feet)	95	180	205	205	89.2	
Facility Elev. (ft. NGVD)	3.25	3.8	6.23	6.23		
Screened Interval						
From	50	94	185			
To	60	99	195			
Pumped Or Flowing						
Pump Type	None	None	None	None	Unspecified	None
Pump Int. Elev.						
Feet (NGVD)						
Feet (BLS)						
Pump Capacity(GPM)	0	0	0	0	0	0
Year Drilled	2019	2019	2019	2019		
Planar Location						
Source						
Feet East	823578	897692	920611.202	920611.202	896054	
Feet North	367393	528298	571665.712	571665.712	536487	
Accounting Method	None	None	None	None	None	None
Use Status	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Water Use Type	Monitor	Monitor	Monitor	Monitor	Monitor	Monitor
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer

TABLE - A
Description Of Wells.

Application Number: **201117-4**

Well ID	289063	289064	289065
Name	Bird Drive MW-2	Tree Island MW-1 (20 ft	Tree Island MW-1 (40 ft
Map Designator	Bird Drive MW-2	Tree Island MW-1 (20 ft	Tree Island MW-1 (40 ft
FLUWID Number			
Well Field			
Existing/Proposed	P	P	P
Well Diameter(Inches)	2	2	2
Total Depth(feet)	20	20	40
Cased Depth(feet)			
Facility Elev. (ft. NGVD)			
Screened Interval			
From			
To			
Pumped Or Flowing			
Pump Type	None	None	None
Pump Int. Elev.			
Feet (NGVD)			
Feet (BLS)			
Pump Capacity(GPM)	0	0	0
Year Drilled			
Planar Location			
Source			
Feet East			
Feet North			
Accounting Method	None	None	None
Use Status	Monitor	Monitor	Monitor
Water Use Type	Monitor	Monitor	Monitor
Aquifer	Biscayne Aquifer	Biscayne Aquifer	Biscayne Aquifer


C-51 Reservoir Flow Route
C-51 Reservoir
C-51 Canal
E-1 Canal
Hillsboro Canal
L-36 Canal
L-35A Canal
North New River Canal
CBWCD via arrowhead GC
C-11 Canal
L-33 Canal
Northwest Wellfield
L-30 Canal
Miami Springs, Hialeah, Preston Wellfields
C-4 Canal
C-2 Canal
Alexander Orr Wellfield
West Wellfield
Snapper Creek Wellfield
Southwest Wellfield
South Miami Heights Wellfield
South Dade Wellfields
Legend
C-51 Reservoir
C-51 Flow Route
SFWMD Canals
PRIMARY
Wellfield Protection Areas
Particle Travel Time (Days)
10
30
100
210
AVG
INT
MAX
OUTER
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
MIAMI-DADE COUNTY
MIAMI-DADE WATER AND SEWER DEPARTMENT
Figure 1-2
N
W
E
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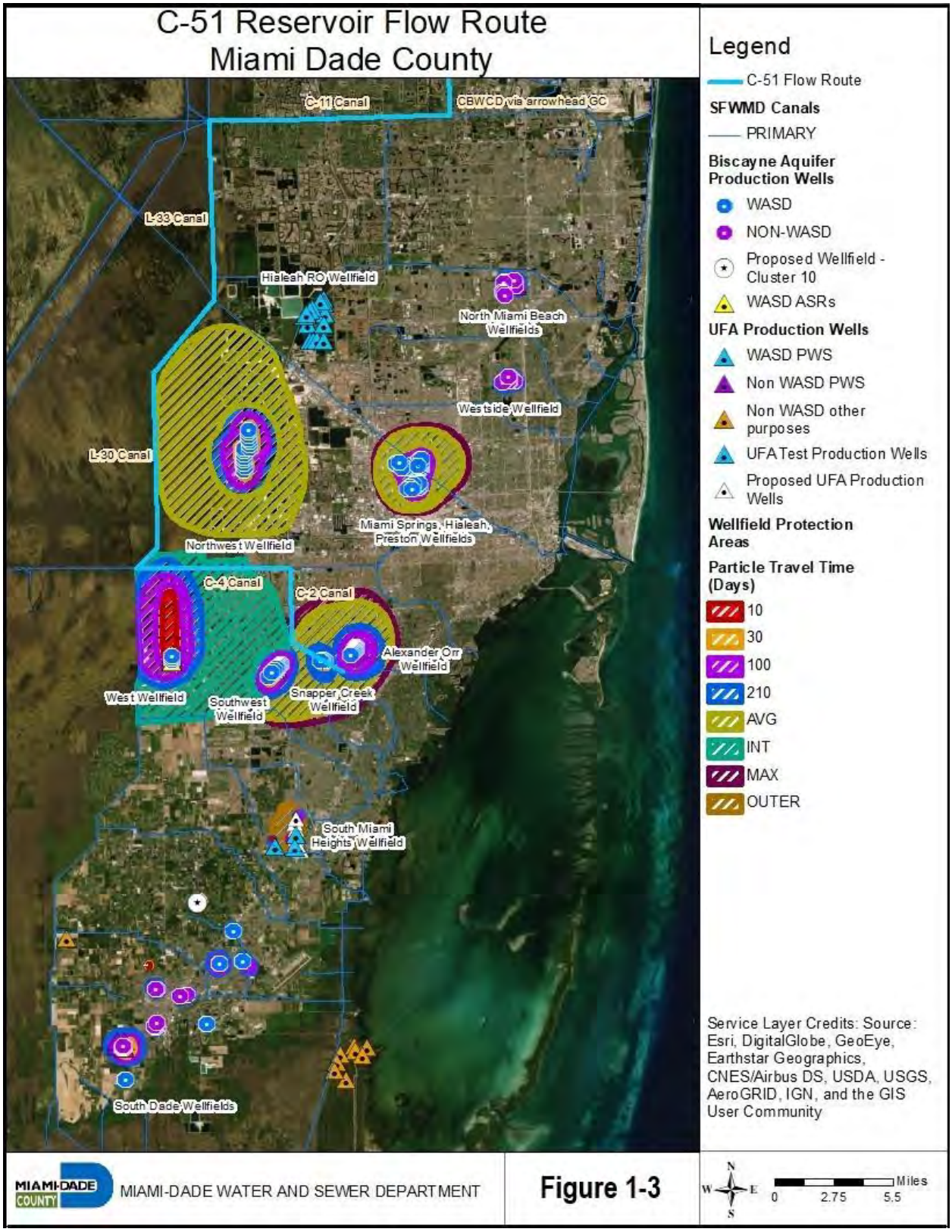
Miles
0
5
10


C-51 Reservoir Flow Route
Miami Dade County
C-11 Canal
CBWCD via arrowhead GC
L-33 Canal
Hialeah RO Wellfield
North Miami Beach Wellfields
Westside Wellfield
L-30 Canal
Miami Springs, Hialeah, Preston Wellfields
Northwest Wellfield
C-4 Canal
C-2 Canal
Alexander Orr Wellfield
West Wellfield
Southwest Wellfield
Snapper Creek Wellfield
South Miami Heights Wellfield
South Dade Wellfields
Legend
C-51 Flow Route
SFWMD Canals
PRIMARY
Biscayne Aquifer Production Wells
WASD
NON-WASD
Proposed Wellfield - Cluster 10
WASD ASRs
UFA Production Wells
WASD PWS
Non WASD PWS
Non WASD other purposes
UFA Test Production Wells
Proposed UFA Production Wells
Wellfield Protection Areas
Particle Travel Time (Days)
10
30
100
210
AVG
INT
MAX
OUTER
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
MIAMI-DADE COUNTY
MIAMI-DADE WATER AND SEWER DEPARTMENT
Figure 1-3
N
W
E
S
Miles
0
2.75
5.5

Alternative Water Supply Project Development

Project / Milestone	Average Finished Water daily Flow	Milestone Completion date
Hialeah Floridan R.O. WTP Phase 1-a, 10.0 mgd WTP and initial Floridan aquifer supply wells (7.5 mgd, limited by water supply)	7.5 mgd	
• Notice to Proceed Design/Permit		Completed
• Notice to Proceed Construction		Completed
• Turnover/Project Completion		Completed
Hialeah Floridan R.O. WTP Phase 1-b, additional 4 Floridan aquifer supply wells (10.0 mgd, maximum treatment capacity	2.5 mgd	
• Notice to Proceed Design/Permit		Completed
• Notice to Proceed Construction		Completed
• Turnover/Project Completion		12/31/2022
C-51 Reservoir	15 mgd	
• Notice to Proceed Design/Permit		Completed
• Notice to Proceed Construction		12/14/2020
• Turnover/Project Completion		10/31/2022
South Miami Heights WTP Back-Up Phase 1	12.45 mgd	
• Notice to Proceed Design/Permit		Completed
• Notice to Proceed Construction		12/31/2023
• Turnover/Project Completion		12/31/2026
South Miami Heights WTP Back-Up Phase 2	5.0 mgd	
• Notice to Proceed Design/Permit		Completed
• Notice to Proceed Construction		12/31/2030
• Turnover/Project Completion		12/31/2033

MDWASD Biscayne Aquifer Wellfields Operation Plan Summary (October 2021)

1	2	3	4				5	6	7	8	7	8	9
WTP Subarea and Wellfield	Existing Wellfield Data (2014)		Historic [b] (Pre 4/1/2006) Base Condition Annual Average Pumpage (MGD)	Existing 2015 Base Condition Annual Average Pumpage (MGD)	Proposed Base Condition Dry Season Annual Average Pumpage (MGD)	Proposed Base Condition Wet Season Annual Average Pumpage (MGD)	Individual Wellfield ANNUAL AVERAGE Pumpage Allocation						Remarks
	Design Capacity (mgd)	Number of Wells					2020-2022		Proposed 2023 - 2040 Dry Season		Proposed 2023 - 2040 Wet Season		
							BG	(mgd)	BG	(mgd)	BG	(mgd)	
Hialeah-Preston [c]													
Hialeah	12.54	3	3.1	70.0	70.0	70.0	25.550	70.00	25.550	70.00	25.550	70.00	Total not to exceed 25.500 BGY
John E. Preston	53.28	7	37.2										
Miami Springs	79.3	20	29.7										
Medley	48.96	4	0										
Northwest [a]	149.35	15	88.7	85.4	68.32	68.32	31.171	85.40	24.937	68.32	24.937	68.32	
Subtotal	**343.43**	**49**	**164.5**	**155.4**	**138.3**	**138.3**	**56.721**	**155.40**	**50.487**	**138.32**	**50.487**	**138.32**	see comment (g)
Alexander Orr [d]													
Alexander Orr	74.40	10	62.0	40.0	61.6	61.6	62.524	171.30	82.600	226.30	80.957	221.80	
Snapper Creek	40.00	4	20.4	21.9	20.1	19.7							
Southwest	161.20	17	83.8	109.4	144.6	140.5							
West	32.40	3	15.0	15.0	1.5	6.8	5.475	15.00	0.548	1.50	2.482	6.80	
Subtotal	**308.00**	**34**	**181.2**	**186.3**	**227.8**	**228.6**	**67.999**	**186.30**	**83.147**	**227.89**	**83.439**	**228.60**	see comment (g)
South Dade [e]													
Elevated Tank	4.32	2	1.3	1.3	1.4	1.4	1.095	3.00	2.592	7.10	2.592	7.10	
Leisure City	4.18	4	2.9	1.6	4.8	4.8							
Naranja	1.15	1	0.1	0.1	0.9	0.9							
Everglades Labor Camp [e]	5.04	3	0.7	2.2	2.9	2.2	1.752	4.80	1.424	3.90	1.168	3.20	
Newton [e]	4.32	2	2.1	2.6	1.0	1.0							
Subtotal	**19.01**	**12**	**7.1**	**7.8**	**11.0**	**10.3**	**2.847**	**7.80**	4.015	11.00	3.760	10.30	see comment (g)
New Wellfield [f]													
Cluster 10	NA	NA	NA	NA	15	15	-	-	5.475	15.00	5.475	15.00	
Subtotal	**0.00**	**0**	**0**	**0**	**15**	**15**	**0.000**	**0.00**	**5.475**	**15.00**	**5.475**	**15.00**	
MDWASD System Total	**670.44**	**95**	**347.0**	**349.5**	**392.1**	**392.2**							
Total Not-To-Exceed System Wide Pumpage					**Annual in BGY (mgd)**		**127.567**	**349.50**	**143.124**	**392.21**	**143.160**	**392.22**	System wide allocation, not less than revised baseline allocation, not the sum of individual wellfield pumpage allocations, and may be more restrictive.

Notes: BG = Billion Gallons; MGD = Million Gallons per Day

(a) Northwest wellfield design capacity with pumps at high speed; 110 mgd when pumps operate at low speed.

(b) These numbers are based on historical raw water values at the treatment plants for a 12-month running average during the five-year period preceding 4/1/2006 in accordance with SFWMD Water Availability Rule (April 28, 2007). Values for the individual wellfields are approximations.

(c) Base Condition Water Use of the North System, Hialeah-Preston is 155.4 mgd. Optimization to regional flows results on revising the base condition (proposed) to 138.32 mgd. Please note (g)

(d) Base Condition Water Use of the Central System, Alexander Orr is 186.3 mgd. Optimization to regional flows results on revising the base condition (proposed) to 227.89 mgd in the dry season and 228.60 mgd in the wet season. Please note (g)

(e) Base Condition Water Use of the South Dade is 7.8 mgd. Optimization to regional flows results on revising the base condition (proposed) to 11.0 mgd in the dry season and 10.3 mgd in the wet season. Please note (g)

(f) Cluster 10 is proposed new wellfield in Central Dade

EXHIBIT 10

1/14/2015

TABLE 5-3 WASD Historical Water Use (2015-2019)

1	2	3	4	5	6	7	8	9	10	11	12	13
FINISHED WATER HISTORICAL USE							**RAW WATER HISTORICAL USE**					**Ratio Raw: Finished (Total Annual Use)**
Year	**Population Served ***	**Per Capita Usage (gpcd)**	**Total Annual Use (MG)**	**Average Month Use (MG)**	**Max Month Use (MG)**	**Ratio Max: Avg. Month**	**Per Capita Usage (gpcd)**	**Total Annual Use (MG)**	**Average Month Use (MG)**	**Max Month Use (MG)**	**Ratio Max: Avg. Month**	
TOTAL WASD WATER SYSTEM SERVICE AREA **												
2015	2,281,851	135.68	113,007	9,417	9,859.7	1.05	144.69	120,511	10,043	10,526	1.05	1.07
2016	2,306,905	139.42	117,715	9,810	10,143.9	1.03	150.19	126,465	10,539	11,042	1.05	1.07
2017	2,331,959	138.80	118,143	9,845	10,288.3	1.05	149.42	127,182	10,599	11,075	1.00	1.08
2018	2,357,013	139.19	119,750	9,212	10,336.0	1.12	150.71	129,658	10,805	11,163	1.03	1.08
2019	2,382,067	135.60	117,896	9,825	10,191.5	1.04	145.66	126,646	10,554	10,961	1.04	1.07
3-year Avg. (2071-2019)	-	137.86	-	-	-	1.07	148.60	-	-	-	1.02	1.08

* Source of Population Information: Miami-Dade County RER, Research and Economic Analysis Section, 2010 Census, 2015 TAZ revised population data.

**Historical Raw and Finished Water Use as reported to SFWMD.

MIAMI-DADE WASD PROJECTED RAW WATER DEMAND BY SOURCE DURING DRY SEASON

MIAMI-DADE WASD SERVICE AREA PROJECTIONS											RAW WATER AADD BY SOURCE (MGD)										
											Biscayne Aquifer							Floridan Aquifer			Total All Sources
Year	Population[a]	Finished Water Use (gpcd)[b]	AADD Finished Water Use[c] (MGD)	CumulativeWater Conservation (0.26mgd/year)[d] (MGD) Credit	Reuse/ Reclaimed Water (MGD) Credit	Adjusted Finished Water Demand (MGD)	Adjusted Finished Water Use (gpcd)[e]	City of Homestead & Port of Miami Finished Water Demand (MGD)[f]	Total Finished Water Demand (MGD)	Total Raw Water Demand (MGD)-Lime Softening Finish/Raw=0.985, RO Raw/Finish=1.333, Souh Dade Raw/Finish=1	South Dade	Hialeah Lime Softening WTP	Shift Hialeah-Preston service area to Alexander-Orr WTP	Alexander-Orr Lime Softening WTP	Shift Alexander-Orr service area to New Lime Softening WTP - Cluster 10 wells	Back-up - New Lime Softening SMHs WTP	Total Biscayne Aquifer	Hialeah RO WTP	Back up - New SMH RO WTP[g]	Total Floridan Aquifer	
2020-2022	2,407,121	137.86	331.86	0.78	0.00	331.08	137.54	2.30	340.34	348.58	7.50	135.77	0.00	191.98	0.00	0.00	335.25	13.33	0.00	13.33	348.58
2023	2,482,977	137.86	342.31	1.04	0.00	341.27	137.45	2.30	343.56	351.86	7.67	137.19	0.00	193.66	0.00	3.00	338.53	13.33	23.27	13.33	351.86
2024-2025	2,533,548	137.86	349.29	1.56	0.00	347.73	137.25	2.30	350.02	358.40	8.01	138.32	1.72	198.75	0.00	3.00	345.07	13.33	23.27	13.33	358.40
2026-2030	2,659,975	137.86	366.72	2.86	0.00	363.86	136.79	2.30	366.15	374.77	8.85	138.32	8.82	214.26	0.00	3.00	361.44	13.33	23.27	13.33	374.77
2031-2035	2,786,403	137.86	384.15	4.16	0.00	379.99	136.37	2.30	382.28	391.13	9.70	138.32	15.93	227.89	0.00	3.00	375.91	13.33	23.27	13.33	389.24
2036-2040	2,912,830	137.86	401.58	5.46	0.00	396.12	135.99	2.30	398.41	407.50	10.30	138.32	23.04	227.89	15.00	3.00	391.51	13.33	23.27	13.33	404.84

MIAMI-DADE WASD PROJECTED FINISHED WATER DEMAND BY SOURCE DURING DRY SEASON

MIAMI-DADE WASD SERVICE AREA PROJECTIONS											FINISHED WATER AADD BY SOURCE (MGD)										
											Biscayne Aquifer							Floridan Aquifer			Total All Sources
Year	Population[a]	Finished Water Use (gpcd)[b]	AADD Finished Water Use[c] (MGD)	Water Conservation[d] (MGD) Credit	Reuse/ Reclaimed Water (MGD) Credit	Adjusted Finished Water Demand (MGD)	Adjusted Finished Water Use (gpcd)[e]	City of Homestead & Port of Miami Finished Water Demand (MGD)[f]	Total Finished Water Demand (MGD)	Total Raw Water Demand (MGD)-Lime Softening Finish/Raw=0.985, RO Raw/Finish=1.333, Souh Dade Raw/Finish=1	South Dade	Hialeah Lime Softening WTP	Shift Hialeah-Preston service area to Alexander-Orr WTP	Alexander-Orr Lime Softening WTP	Shift Alexander-Orr service area to New Lime Softening WTP - Cluster 10 wells	Back-up - New Lime Softening SMHs WTP	Total Biscayne Aquifer	Hialeah RO WTP	Back up - New SMH RO WTP[g]	Total Floridan Aquifer	
2020-2022	2,407,121	137.86	331.86	0.78	0.00	331.08	137.54	2.30	340.34	348.58	7.50	133.74	0.00	189.10	0.00		330.34	10.00	0.01	10.00	340.34
2023	2,482,977	137.86	342.31	1.04	0.00	341.27	137.45	2.30	343.56	351.86	7.67	135.14	0.00	190.76	0.00	2.90	333.56	10.00	17.45	10.00	343.56
2024-2025	2,533,548	137.86	349.29	1.56	0.00	347.73	137.25	2.30	350.02	358.40	8.01	136.25	1.69	195.76	0.00	2.90	340.02	10.00	17.45	10.00	350.02
2026-2030	2,659,975	137.86	366.72	2.86	0.00	363.86	136.79	2.30	366.15	374.77	8.85	136.25	8.69	211.05	0.00	2.90	356.15	10.00	17.45	10.00	366.15
2031-2035	2,786,403	137.86	384.15	4.16	0.00	379.99	136.37	2.30	382.28	391.13	9.70	136.25	15.69	224.47	0.00	2.90	370.42	10.00	17.45	10.00	380.42
2036-2040	2,912,830	137.86	401.58	5.46	0.00	396.12	135.99	2.30	398.41	407.50	10.30	136.25	22.69	224.47	14.78	2.90	385.79	10.00	17.45	10.00	395.79

MIAMI-DADE WASD PROJECTED RAW WATER DEMAND BY SOURCE DURING WET SEASON

MIAMI-DADE WASD SERVICE AREA PROJECTIONS											RAW WATER AADD BY SOURCE (MGD)										
											Biscayne Aquifer							Floridan Aquifer			Total All Sources
Year	Population[a]	Finished Water Use (gpcd)[b]	AADD Finished Water Use[c] (MGD)	CumulativeWater Conservation (0.26mgd/year)[d] (MGD) Credit	Reuse/ Reclaimed Water (MGD) Credit	Adjusted Finished Water Demand (MGD)	Adjusted Finished Water Use (gpcd)[e]	City of Homestead & Port of Miami Finished Water Demand (MGD)[f]	Total Finished Water Demand (MGD)	Total Raw Water Demand (MGD)-Lime Softening Finish/Raw=0.985, RO Raw/Finish=1.333, Souh Dade Raw/Finish=1	South Dade	Hialeah Lime Softening WTP	Shift Hialeah-Preston service area to Alexander-Orr WTP	Alexander-Orr Lime Softening WTP	Shift Alexander-Orr service area to New Lime Softening WTP - Cluster 10 wells	Back-up - New Lime Softening SMHs WTP	Total Biscayne Aquifer	Hialeah RO WTP	Back up - New SMH RO WTP[g]	Total Floridan Aquifer	
2020-2022	2,407,121	137.86	331.86	0.78	0.00	331.08	137.54	2.30	340.34	348.58	7.50	135.77	0.00	191.98	0.00	0.00	335.25	13.33	0.00	13.33	348.58
2023	2,482,977	137.86	342.31	1.04	0.00	341.27	137.45	2.30	343.56	351.86	7.67	137.19	0.00	193.66	0.00	3.00	338.53	13.33	23.27	13.33	351.86
2024-2025	2,533,548	137.86	349.29	1.56	0.00	347.73	137.25	2.30	350.02	358.40	8.01	138.32	1.72	198.75	0.00	3.00	345.07	13.33	23.27	13.33	358.40
2026-2030	2,659,975	137.86	366.72	2.86	0.00	363.86	136.79	2.30	366.15	374.77	8.85	138.32	8.82	214.26	0.00	3.00	361.44	13.33	23.27	13.33	374.77
2031-2035	2,786,403	137.86	384.15	4.16	0.00	379.99	136.37	2.30	382.28	391.13	9.70	138.32	15.93	228.55	0.00	3.00	376.57	13.33	23.27	13.33	389.90
2036-2040	2,912,830	137.86	401.58	5.46	0.00	396.12	135.99	2.30	398.41	407.50	10.30	138.32	23.04	228.55	15.00	3.00	392.17	13.33	23.27	13.33	405.50

MIAMI-DADE WASD PROJECTED FINISHED WATER DEMAND BY SOURCE DURING WET SEASON

MIAMI-DADE WASD SERVICE AREA PROJECTIONS											FINISHED WATER AADD BY SOURCE (MGD)										
											Biscayne Aquifer							Floridan Aquifer			Total All Sources
Year	Population[a]	Finished Water Use (gpcd)[b]	AADD Finished Water Use[c] (MGD)	Water Conservation[d] (MGD) Credit	Reuse/ Reclaimed Water (MGD) Credit	Adjusted Finished Water Demand (MGD)	Adjusted Finished Water Use (gpcd)[e]	City of Homestead & Port of Miami Finished Water Demand (MGD)[f]	Total Finished Water Demand (MGD)	Total Raw Water Demand (MGD)-Lime Softening Finish/Raw=0.985, RO Raw/Finish=1.333, Souh Dade Raw/Finish=1	South Dade	Hialeah Lime Softening WTP	Shift Hialeah-Preston service area to Alexander-Orr WTP	Alexander-Orr Lime Softening WTP	Shift Alexander-Orr service area to New Lime Softening WTP - Cluster 10 wells	Back-up - New Lime Softening SMHs WTP	Total Biscayne Aquifer	Hialeah RO WTP	Back up - New SMH RO WTP[g]	Total Floridan Aquifer	
2020-2022	2,407,121	137.86	331.86	0.78	0.00	331.08	137.54	2.30	340.34	348.58	7.50	133.74	0.00	189.10	0.00		330.34	10.00	0.01	10.00	340.34
2023	2,482,977	137.86	342.31	1.04	0.00	341.27	137.45	2.30	343.56	351.86	7.67	135.14	0.00	190.76	0.00	2.90	333.56	10.00	17.45	10.00	343.56
2024-2025	2,533,548	137.86	349.29	1.56	0.00	347.73	137.25	2.30	350.02	358.40	8.01	136.25	1.69	195.76	0.00	2.90	340.02	10.00	17.45	10.00	350.02
2026-2030	2,659,975	137.86	366.72	2.86	0.00	363.86	136.79	2.30	366.15	374.77	8.85	136.25	8.69	211.05	0.00	2.90	356.15	10.00	17.45	10.00	366.15
2031-2035	2,786,403	137.86	384.15	4.16	0.00	379.99	136.37	2.30	382.28	391.13	9.70	136.25	15.69	225.12	0.00	2.90	371.07	10.00	17.45	10.00	381.07
2036-2040	2,912,830	137.86	401.58	5.46	0.00	396.12	135.99	2.30	398.41	407.50	10.30	136.25	22.69	225.12	14.78	2.90	386.44	10.00	17.45	10.00	396.44

Footnotes

(a) Population Served represents the 2015 TAZ revised population projections based on 2010 Census Data provided by Miami-Dade County RER, Research and Economic Analysis Section.
(b) The per capita use was determined by taking a 3-year average from 2017 to 2019.
(c) Finished Water Demand was calculated with the 3-year average per capita of 137.86 gpcd.
(d) WASD has been successful in executing its water conservation program since its inception in 2007. Through the end of fiscal year 2019, a cumulative total of 15.80 MGD of water has been saved since implementation of the water conservation program. A systemwide total of 0.26 MGD/year is planned through 2040 for an additional cumulative total of 5.46 MGD.
(e) Adjusted per capita after taking credit in finished water demand projections for reductions in finished water use associated with water conservation.
(f) The demand for Homestead is based on the City's existing 20-year water wholesale agreement with WASD to purchase up to 3 MGD of water to meet the demands of its retail customers. The City purchases an annual average of 1.7 MGD, and a total of 1.3 MGD is planned for future demands. The demand for PortMiami is based on the anticipated expansion of the Port as contemplated in its facilities Master Plan.
(g) SMHs remains on the permit as backup water supply in the event C-51 does not become operational.

Table 1. Requested Amounts and Source of RAW Water				
Source 1	Source 2.	TOTAL	Source 3 - Back up	Source 4 - Back up
Biscayne Aquifer	Floridan Aquifer (Hialeah RO)		Biscayne Aquifer (SMH)	Floridan Aquifer (SMH)
MGY / MGM	MGY / MGM	MGY / MGM	MGY/MGM	MGY/MGM
143,153 / 12,525.89	4,855 / 425.73	148,018 / 12,951.61	1,095 / 95.8	8,494 / 743.19
(392.2 MGD)	(13.33 MGD)	(405.53 MGD)	(3.00 MGD)	(23.27 MGD)

Table 2. Requested Amounts and Source(s) of RAW Water (MGY/MGM)					
	Year	Annual Average Daily Raw Water Demand (mgd)	Source 1 Biscayne Aquifer	Source 2 Floridan Aquifer (Hialeah RO)	TOTAL
Historical Water Supply	2015	326.65	116,606 / 10,203.01	2,621 / 229.31	119,226 / 10,432.32
	2016	335.25	119,051 / 10,416.96	3,303 / 289.03	122,354 / 10,705.99
	2017	334.35	119,427 / 10,449.88	2,610 / 228.35	122,037 / 10,678.23
	2018	327.75	116,357 / 10,181.24	3,270 / 286.16	119,627 / 10,467.4
	2019	343.45	122,029 / 10,677.57	3,329 / 291.27	125,358 / 10,968.84
Projected Water Supply	2020	341.02	119,581 / 10,463.36	4,855 / 425.73	124,447 / 10,889.09
	2025	358.40	125,924 / 11,018.33	4,855 / 425.73	130,789 / 11,444.05
	2030	374.77	131,896 / 11,540.87	4,855 / 425.73	136,761 / 11,966.6
	2035	391.13	137,868 / 12,063.42	4,855 / 425.73	142,733 / 12,489.15
	2040	405.53	143,153 / 12,525.89	4,855 / 425.73	148,018 / 12,951.61

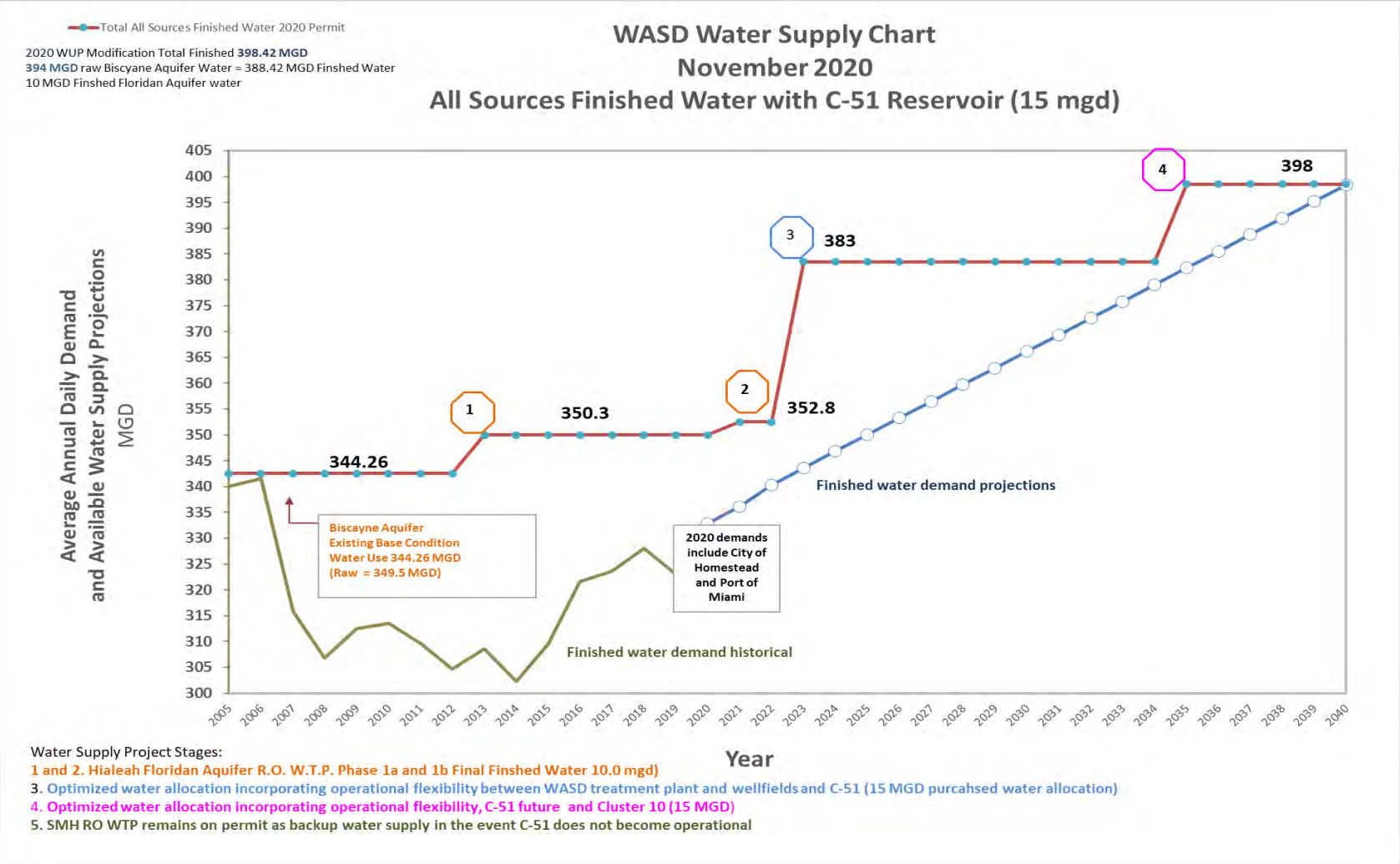


Figure 6-20 WASD Water Supply Chart

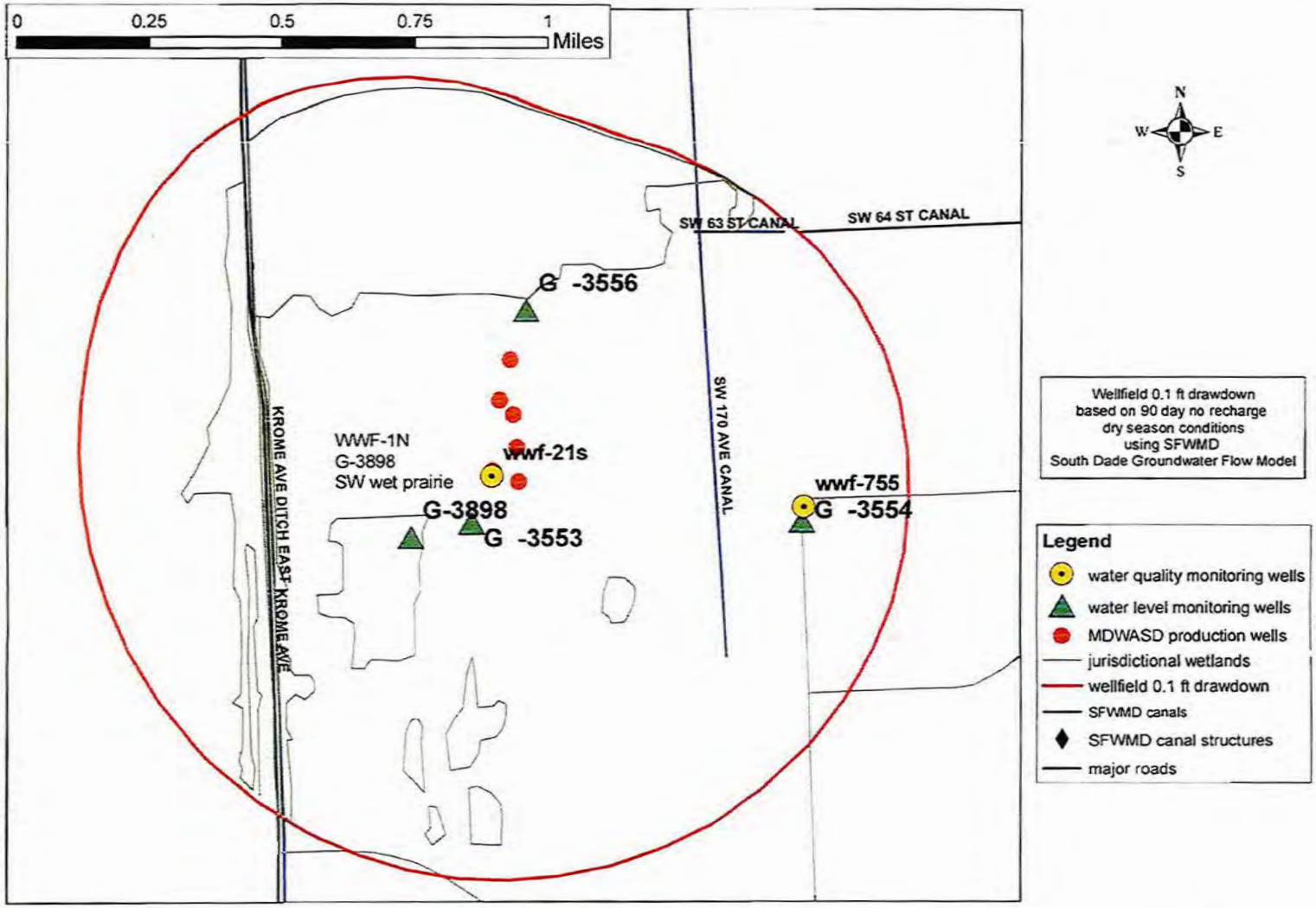


Exhibit 29A

Miami-Dade County Water and Sewer Department
3071 SW 38 Ave
Miami FL 33146

Figure 7. West Wellfield Groundwater Level and Water Quality Monitoring

updated 9/21/10

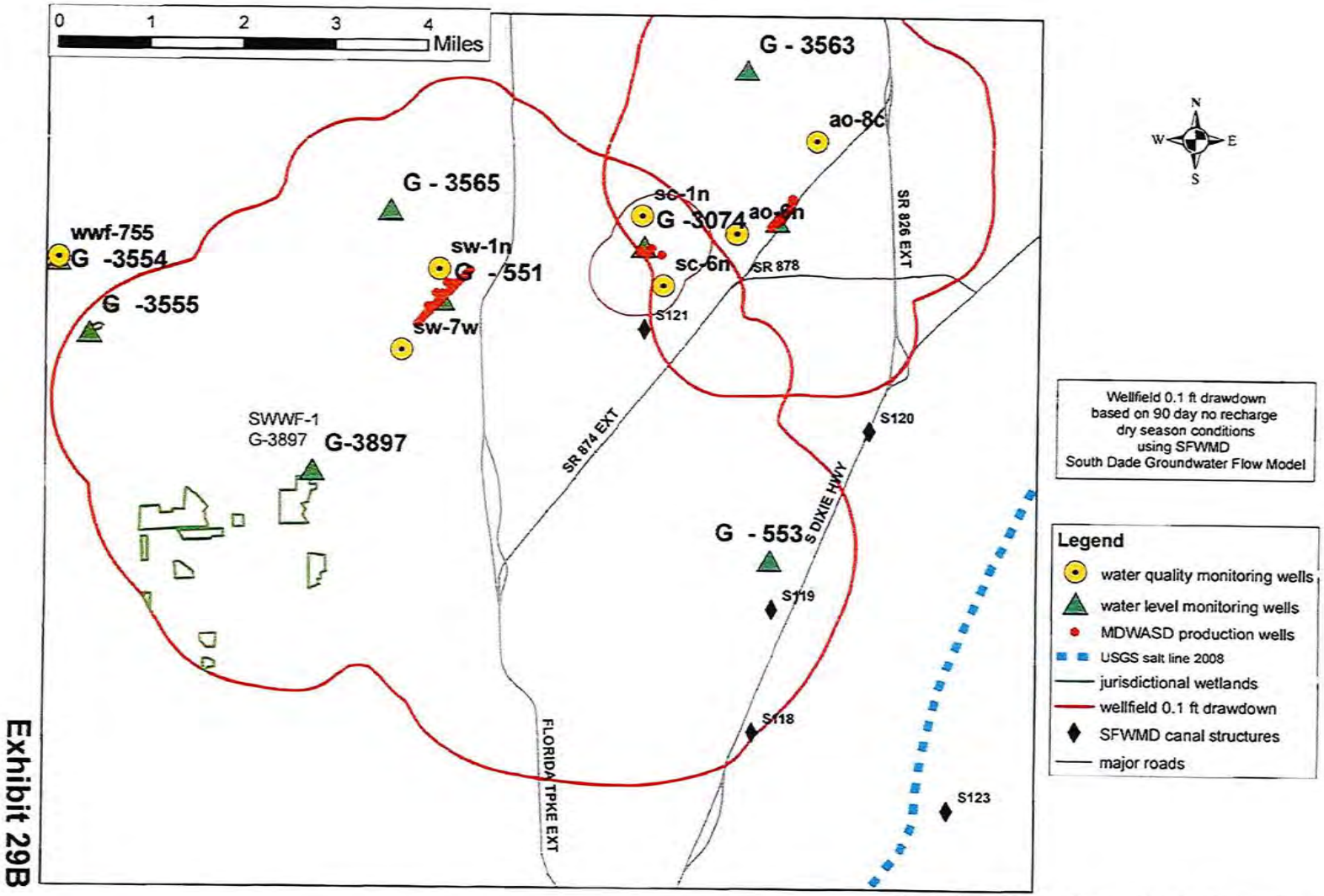


Exhibit 29B

Miami-Dade County Water and Sewer Department
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Miami FL 33146

Figure 8. Southwest, Snapper Creek and Alex Orr Wellfield Groundwater Level and Water Quality Monitoring

updated 9/21/10

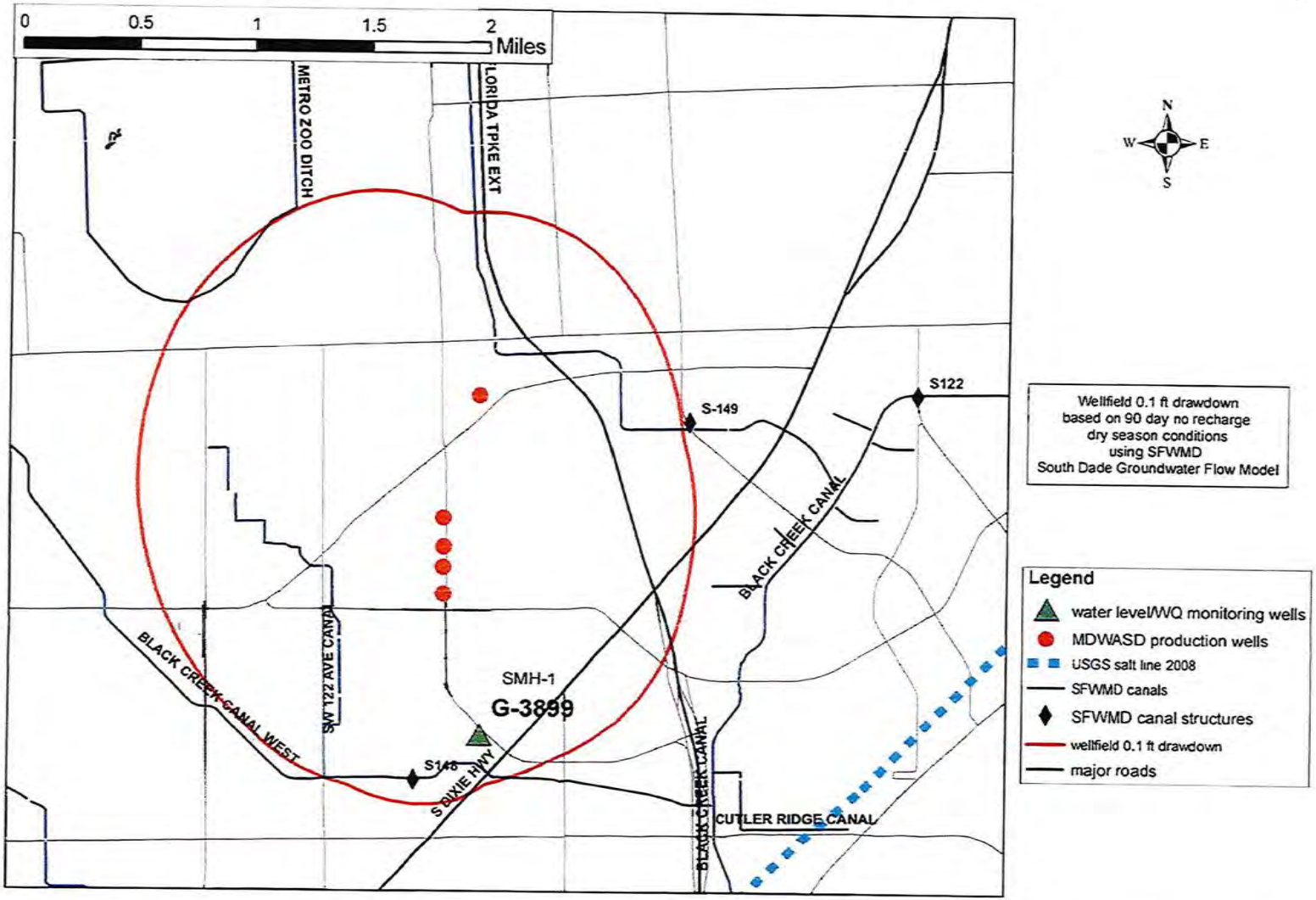

Exhibit 29C

Miami-Dade County Water and Sewer Department
3071 SW38 Ave
Miami FL 33146

Figure 9. South Miami Heights Wellfield Groundwater Level and Water Quality Monitoring

updated 9/7/10

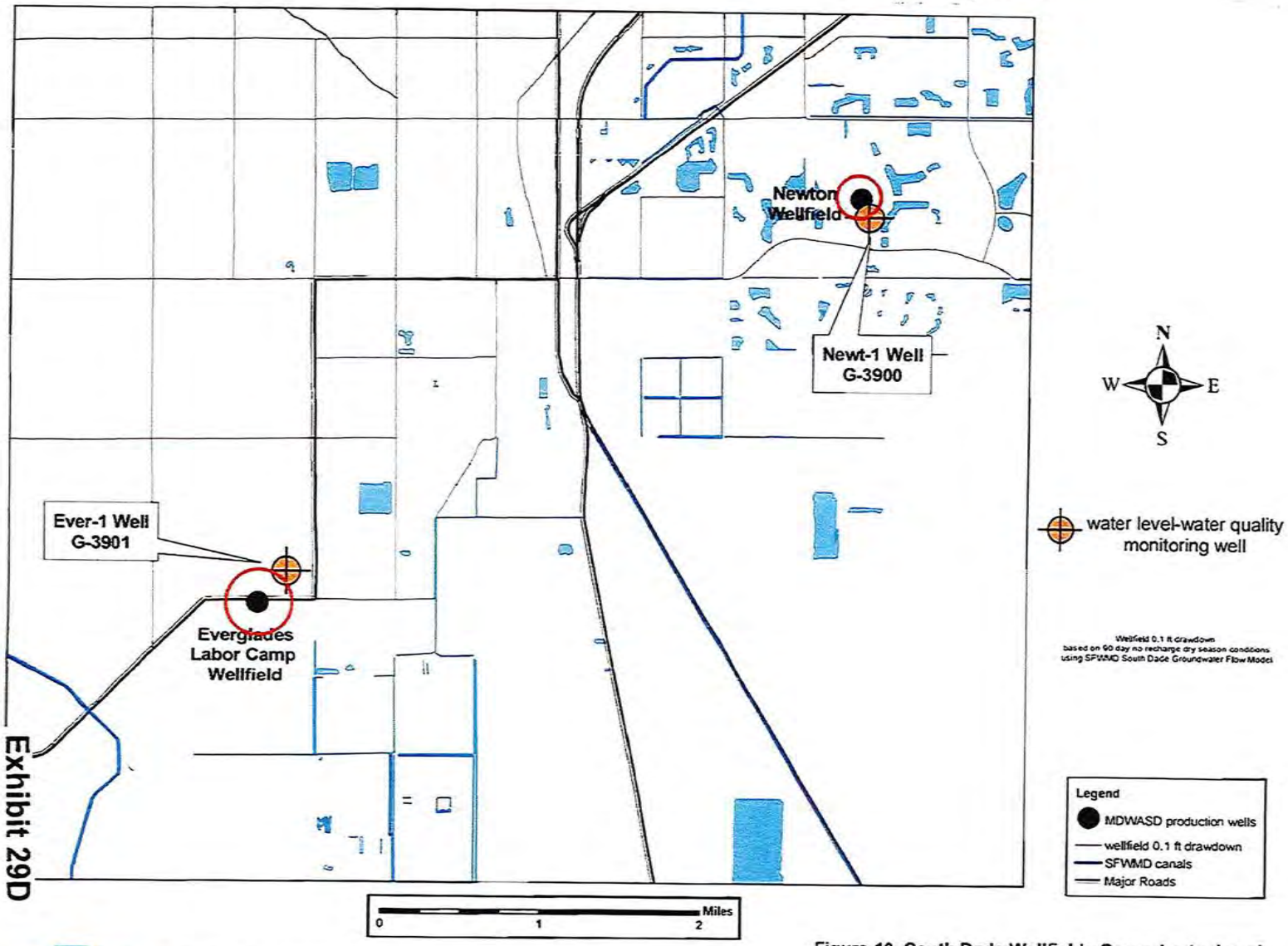

Exhibit 29D

Miami-Dade County Water and Sewer Department
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Figure 10. South Dade Wellfields Groundwater Level and Water Quality Monitoring

updated 9/7/2010

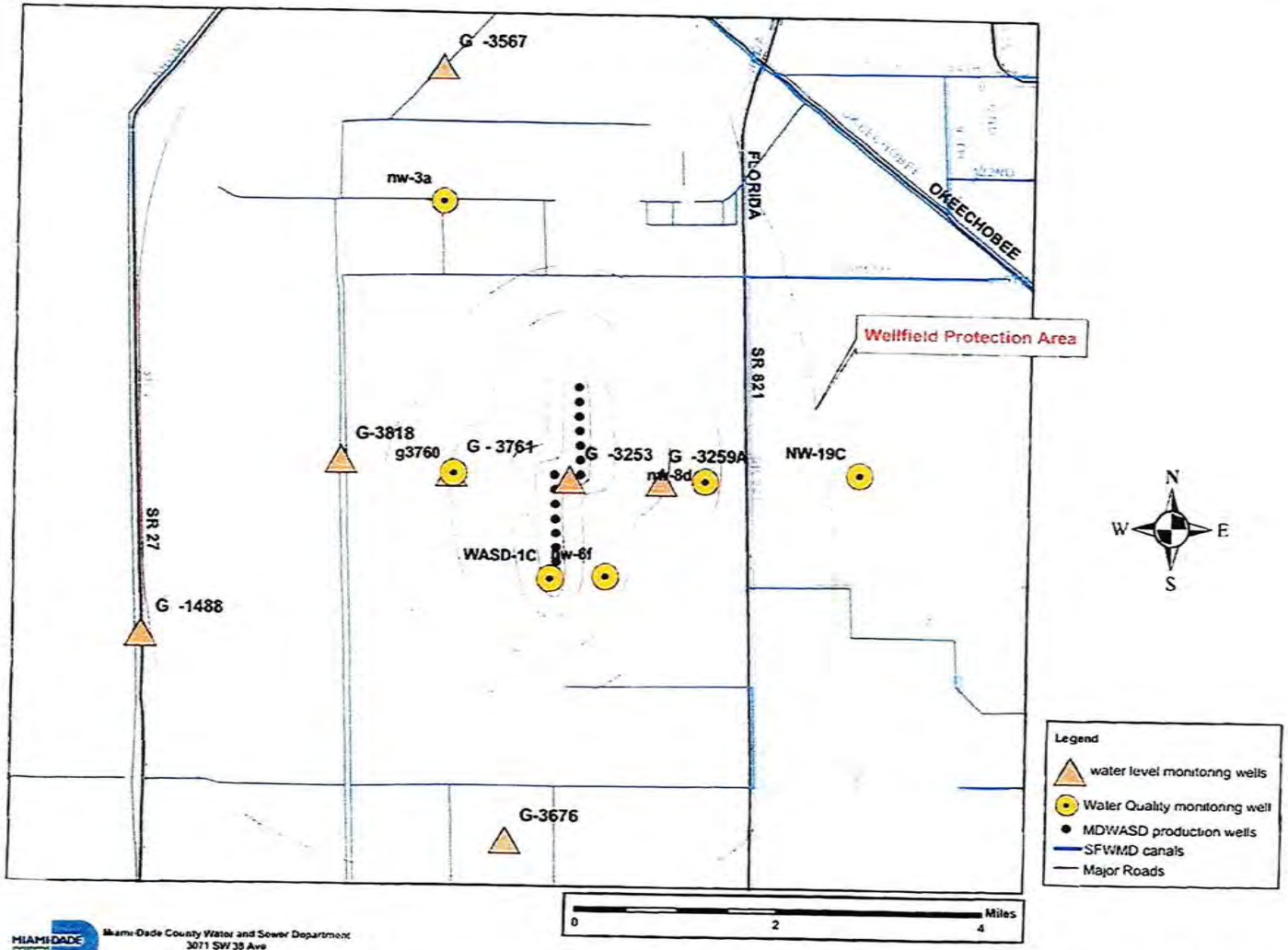

Exhibit 29E

Miami-Dade County Water and Sewer Department
3071 SW 38 Ave
Miami FL 33146

Figure 11. Northwest Groundwater Level and Water Quality Monitoring
11-8-07

Table A. Reporting Water Quality and Water Level Biscayne Monitoring Wells by Wellfield.

01/29/2015

WELL ID	STATION ID	LATITUDE	LONGITUDE	SITE USE	BORE HOLE DEPTH (ft)[1]	CASING DEPTH (ft)[1]	Screen Interval (ft)[1]	WELLFIELD PUMPAGE INTERVERAL (ft)[1]	GROUND WATER LEVEL MONITOR FREQUENCY	WATER QUALITY MONITORING FREQUENCY	WELLFIELD
254130080234501	G-551	25 41 30	-080 23 45	standby supply	80.0	71	29-71	33-108	CONTINUOUS		AO, SC, SWWF
253902080202501	G-553	25 39 02	-080 20 19	observation/monitoring	91.0	79	no screen	33-108	CONTINUOUS		AO, SC, SWWF
254215080201503	G-1074B	25 42 15	-080 20 15	observation/monitoring	39.0	17.0	no screen	33-108	CONTINUOUS		AO, SC, SWWF
	G-3913										
254111080272501	G-3555	25 41 11	-080 27 25	observation/monitoring	19.0	14.0	14-19	33-108	CONTINUOUS		AO, SC, SWWF
254340080203601	G-3563	25 43 40	-080 20 36	observation/monitoring	18.1	13	no screen	33-108	CONTINUOUS		AO, SC, SWWF
254218080241801	G-3565	25 42 18	-080 24 18	observation/monitoring	19.0	14	no screen	33-108	CONTINUOUS		AO, SC, SWWF
DERM Well	AO-6N	25 42 07	-080 20 41	observation/monitoring	60	60	55 - 60	40-100	3xYear	3xYear	AO
DERM Well	AO-8C	25 43 00	-080 19 50	observation/monitoring	60	60	55 - 60	40-100	3xYear	3xYear	AO
DERM Well	SC-1N	25 42 17	-080 21 40	observation/monitoring	60	60	55 - 60	50-108	3xYear	3xYear	SC
DERM Well	SC-6N	25 41 38	-080 21 27	observation/monitoring	60	60	55 - 60	50-108	3xYear	3xYear	SC
DERM Well	SW-2W	25 41 49	-080 24 12	observation/monitoring	60	60	55 - 60	33-104	3xYear	3xYear	SWWF
DERM Well	SW-7W	25 41 01	-080 24 10	observation/monitoring	60	60	55 - 60	33-104	3xYear	3xYear	SWWF
254158080294501	G-3551	25 41 58	-080 29 45	observation/monitoring	18.3	13.3	13.3-18.3	35-70	CONTINUOUS		WWF
254152080282101	G-3553	25 41 52	-080 28 21	observation/monitoring	19.9	14.9	14.9-19.9	35-70	CONTINUOUS		WWF
254152080274501	G-3554	25 41 52	-080 27 45	observation/monitoring	20.0	15.0	15-20	35-70	CONTINUOUS		WWF
254213080281501	G-3556	25 42 13	-080 28 15	observation/monitoring	19.1	14.1	14.1-19.1	35-70	CONTINUOUS		WWF
254207080300201	G-3577	25 42 07	-080 30 02	observation/monitoring	8.0	Open Hole	no screen	35-70	CONTINUOUS		WWF
DERM Well	WWF-21S	25 41 56	-080 28 18	observation/monitoring	48	48	43 - 48	35-70	3xYear	3xYear	WWF
DERM Well	WWF-755	25 41 53	-080 27 44	observation/monitoring	55	55	50 - 55	35-70	3xYear	3xYear	WWF
253948080250701	G-3897	25 39 47	-080 25 08	observation/monitoring	22.5	22.5	17.5-22.5	33-104	CONTINUOUS		SWWF
254152080282601	G-3898	25 41 52	-080 28 25	observation/monitoring	22.8	22.8	17.8-22.8	35-70	CONTINUOUS		WWF
MDWASD well	G-3899	25°34.322N	80°22.633W	observation/monitoring	20.5	15.5	15.5-20.5	*	CONTINUOUS	3xYear	SMH
MDWASD well	G-3901	25°25.109N	80°30.108W	observation/monitoring	22.3	17	17.3-22.3	45-55	CONTINUOUS	3xYear	EVERGLADES
MDWASD well	G-3900	25°27.252N	80°26.811W	observation/monitoring	22	17	17-22	50-65	CONTINUOUS	3xYear	NEWTON
254830080284201	G-1488	25 49 07	-080 28 57	observation/monitoring	20.0	Open Hole	no screen	46-100	CONTINUOUS		NWWF
255027080245501	G-3253	25 50 27	-080 24 55	observation/monitoring	34.5	18.0	no screen	46-100	CONTINUOUS		NWWF
255026080240302	G-3259A	25 50 26	-080 24 03	observation/monitoring	60.0	Open Hole	no screen	46-100	CONTINUOUS		NWWF
255358080260901	G-3567	25 53 58	-080 26 09	observation/monitoring	18.7	13.7	no screen	46-100	CONTINUOUS		NWWF
255035080255402	G-3761	25 50 29	-080 26 02	observation/monitoring	16.3	Open Hole	no screen	46-100	CONTINUOUS		NWWF
254720080253002	G-3676	25 47 20	-080 25 30	observation/monitoring	33.0	23.0	23-33	46-100	CONTINUOUS		NWWF
255036080270501	G-3818	25 50 36	-080 27 05	observation/monitoring	20.0	15.0	15-20	46-100	CONTINUOUS		NWWF
Derm Well	NW-8D	25 50 26	-080 23 38	observation/monitoring	60	60	55 - 60	46-100	3xYear	3xYear	NWWF
Derm Well	NW-6F (replaced NW6D in 2004)	25 49 37	-080 24 30	observation/monitoring	60	60	55 - 60	46-100	3xYear	3xYear	NWWF
Derm Well	WASD-1C[2]	25 51 18	-080 24 49	observation/monitoring	40	40	35 - 40	46-100	3xYear	3xYear	NWWF
Derm Well	G-3760[3]	25 50 29	-080 26 02	observation/monitoring	72.7	70.7	no screen	46-100	CONTINUOUS	3xYear	NWWF
Derm Well	NW-3AR	25 52 50	-080 26 08	observation/monitoring	90	85	85-90	46-100	3xYear	3xYear	NWWF
Derm Well	NW-19C	25 50 31	-080 22 13	observation/monitoring	50	50	45 - 50	46-100	3xYear	3xYear	NWWF

Notes:

AO=Alex Orr Wellfield Heights WTP

SWWF=Southwest Wellfield
NWWF=Northwest Wellfield

1. Feet Below Land Surface (bls)
2. Located in NWWF compound, just north of pump house #15
3. Located west of NWWF, on FPL easement

** - pending survey TOC and GPS coordinates
* proposed production well interval

1/30/2015

EXHIBIT 30

13-00017-W Water Level Monitoring

WELL NAME	ID	WATER LEVEL COLLECTION FREQUENCY	WATER LEVEL SUBMITTAL FREQUENCY
AO-6N	217858	every 4 months	every 4 months
AO-8C	217859	every 4 months	every 4 months
SC-1N	217860	every 4 months	every 4 months
SC-6N	217861	every 4 months	every 4 months
SW-2W	257879	every 4 months	every 4 months
SW-7W	217863	every 4 months	every 4 months
WWF-21S	217869	every 4 months	every 4 months
WWF-755	217870	every 4 months	every 4 months
NW-6F	217878	every 4 months	every 4 months
NW-8D	217877	every 4 months	every 4 months
NW-19C	217882	every 4 months	every 4 months
WASD-1C	217879	every 4 months	every 4 months
NW-3AR	265515	monthly	quarterly
G-551	217851	monthly	quarterly
G-553	257878	monthly	quarterly
G-1074B	217853	monthly	quarterly
G-3253	217872	monthly	quarterly
G-3259A	217873	monthly	quarterly
G-3551	217864	monthly	quarterly
G-3553	217865	monthly	quarterly
G-3554	217866	monthly	quarterly
G-3555	217855	monthly	quarterly
G-3556	217867	monthly	quarterly
G-3563	217856	monthly	quarterly
G-3565	217857	monthly	quarterly
G-3567	217874	monthly	quarterly
G-3577	217868	monthly	quarterly
G-3601-S (replacement well)	286383	monthly	quarterly
G-3611	217703	monthly	quarterly
G-3676	217875	monthly	quarterly
G-3760	217880	monthly	quarterly
G-3761	217944	monthly	quarterly
G-3818	217876	monthly	quarterly
G-3897	217883	monthly	quarterly
G-3898	217884	monthly	quarterly
G-3899	217885	monthly	quarterly
G-3900	217887	monthly	quarterly
G-3901	217886	monthly	quarterly
G-3913	268268	monthly	quarterly
NW-3AR (replaces NW-3A)	265515	monthly	quarterly
SMH-F3	261792	monthly	quarterly

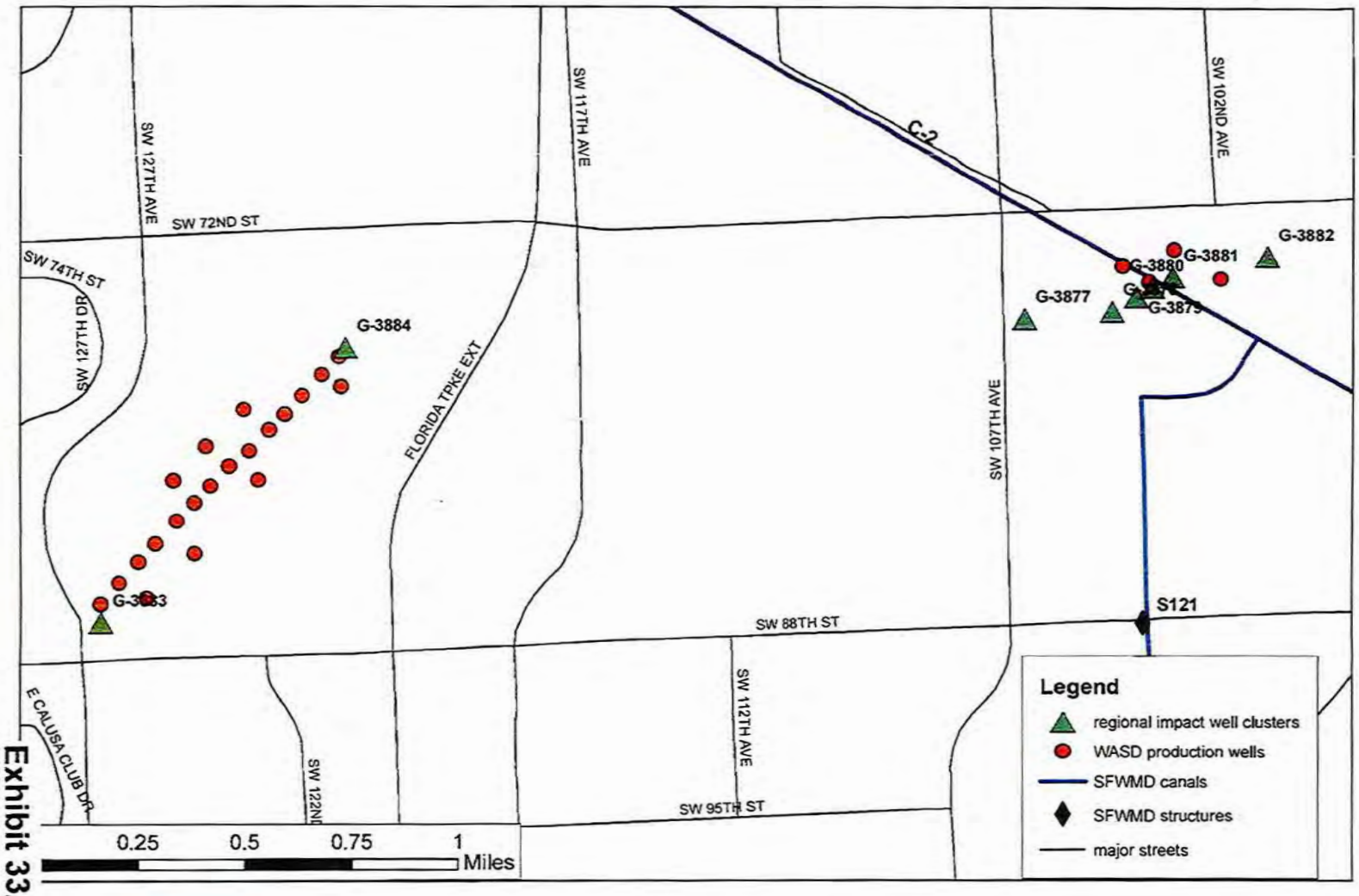

Exhibit 33A

MIAMI-DADE COUNTY

Miami-Dade Water and Sewer Department
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N

Figure 12a. Regional Impact well Cluster locations: Southwest and Snapper Creek wellfields

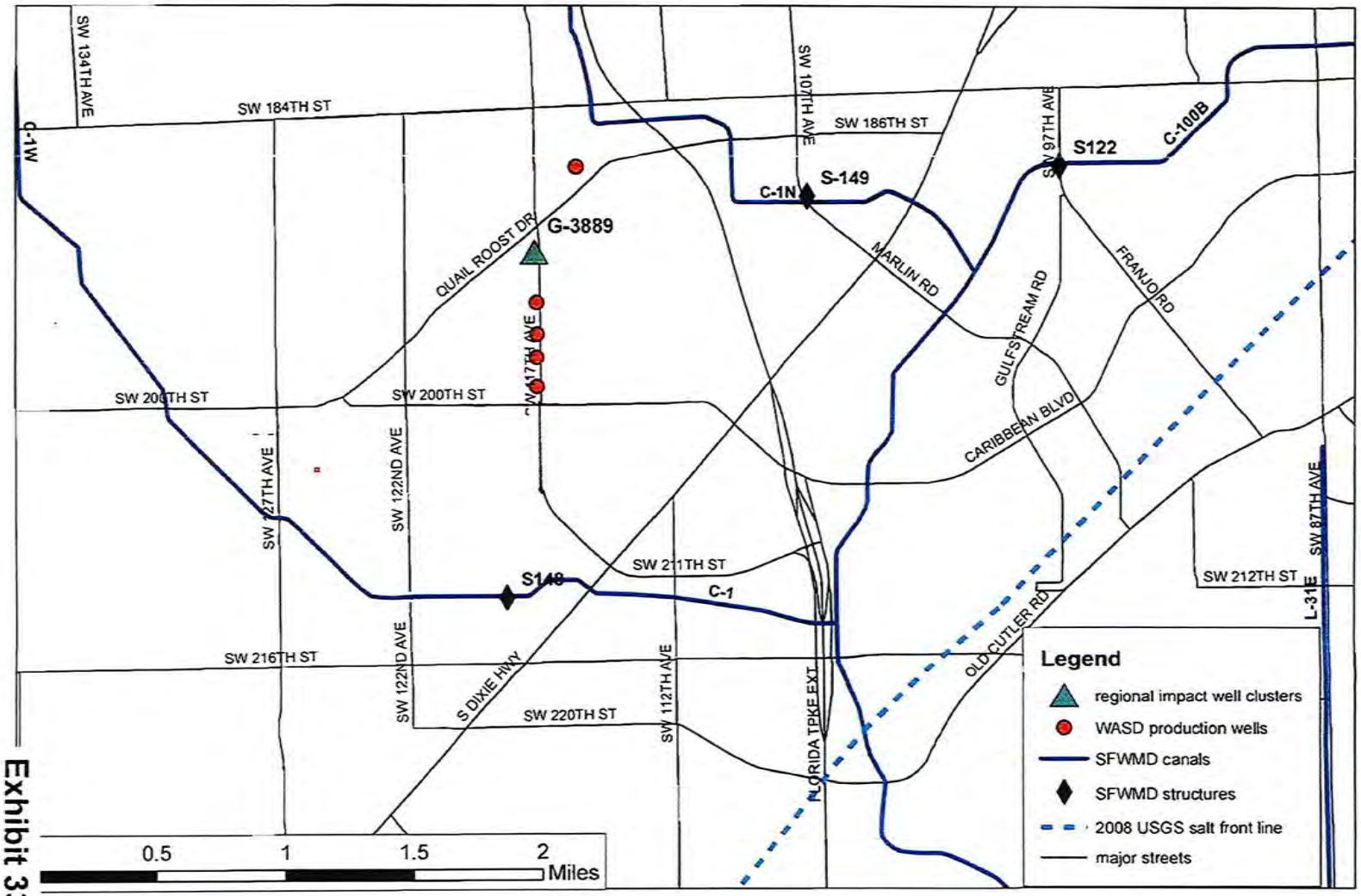


Exhibit 33B

MIAMI-DADE COUNTY

Miami-Dade Water and Sewer Department
3071 SW 38 Ave
Miami FL 33146

Figure 12b. Regional Impact well Cluster locations: South Miami Heights wellfield

New Monitoring Well Completion Schedule

WELL ID	SITE USE	NETWORK	DATE WELL INSTALLATION COMPLETION	STATUS
SWWF-1/G-3897	Located near SWWF for water elevation well-wetland monitoring	WQ/WL	Mar-09	Completed
WWF-1N/G-3898	Located NE of West Wellfield for water elevation well-wetland monitoring	WQ/WL	Mar-09	Completed
SMH-1/G-3899	Located near South Miami Heights Wellfield for water elevation well	WQ/WL	Mar-09	Completed
Ever-1/G-3901	Located near Everglades Labor Camp Wellfield for water elevetaion well	WQ/WL	Mar-09	Completed
Newton-1/G-3900	Located near Newton Wellfield for water elevation well	WQ/WL	Mar-09	Completed
Hialeah RO	Located near new City of Hialeah RO Water Treatment Plant	Floridan monitoring	Based on City of Hialeah RO plant construction	Pending
G-3949	North Miami-Dade County near Broward line	Salt Monitoring	Sep-10	Completed
G-3948	North Miami-Dade County	Salt Monitoring	Sep-10	Completed
G-3947	North Miami-Dade County	Salt Monitoring	Jul-10	Completed
G-3888	City of Miami south of C-6 canal	Salt Monitoring	Oct-09	Completed
G-3887	Eastern Miami-Dade County/Pinecrest	Salt Monitoring	Sep-09	Completed
G-3886	Northeast of SMH Wellfield	Salt Monitoring	Oct-09	Completed
G-3885	South of SMH Wellfield	Salt Monitoring	Aug-09	Completed
G-3946	South Miami-Dade County Model Lands	Salt Monitoring	Jul-09	Completed
G-3877	Snapper Creek Wellfield	Regional Impact	Mar-10	Completed
G-3878	Snapper Creek Wellfield	Regional Impact	Mar-10	Completed
G-3879	Snapper Creek Wellfield	Regional Impact	Mar-10	Completed
G-3880	Snapper Creek Wellfield	Regional Impact	Mar-10	Completed
G-3881	Snapper Creek Wellfield	Regional Impact	Mar-10	Completed
G-3882	Snapper Creek Wellfield	Regional Impact	Mar-10	Completed
G-3889	Located midway between the Proposed SMH Wellfield and the Aquifer Recharge Project	Regional Impact	Mar-10	Completed
G-3884	Southwest Wellfield	Regional Impact	Mar-10	Completed
G-3883	Southwest Wellfield	Regional Impact	Mar-10	Completed
SMH RO	Located near South Miami Heights RO Water Treatment Plant	Floridan monitoring	2014	Pending

EXHIBIT 33C

Exhibit 33C

Exhibit 7-5. ASR, Floridan Aquifer Wellfields & Monitoring Wells, and Waste-Water Treatment Plants

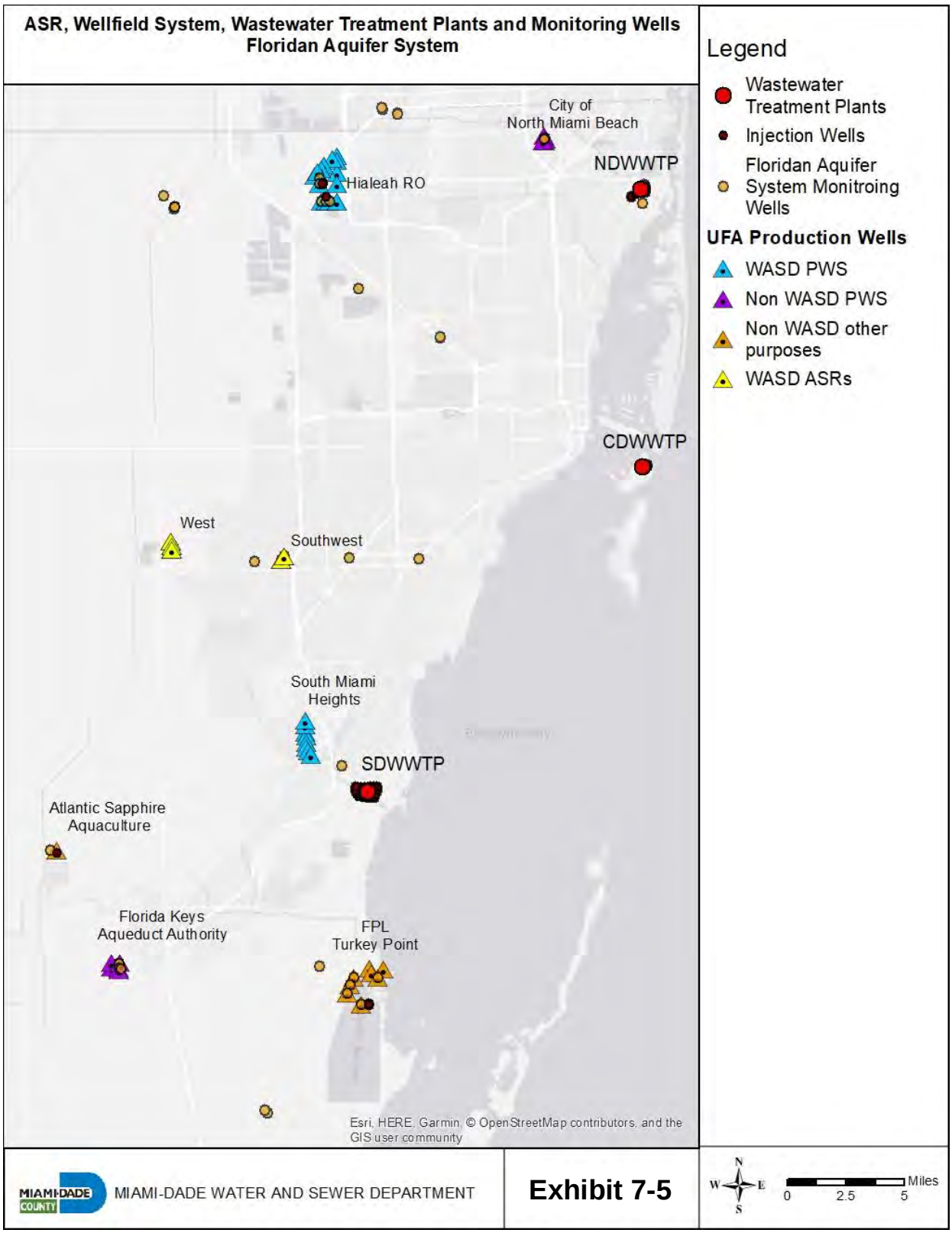
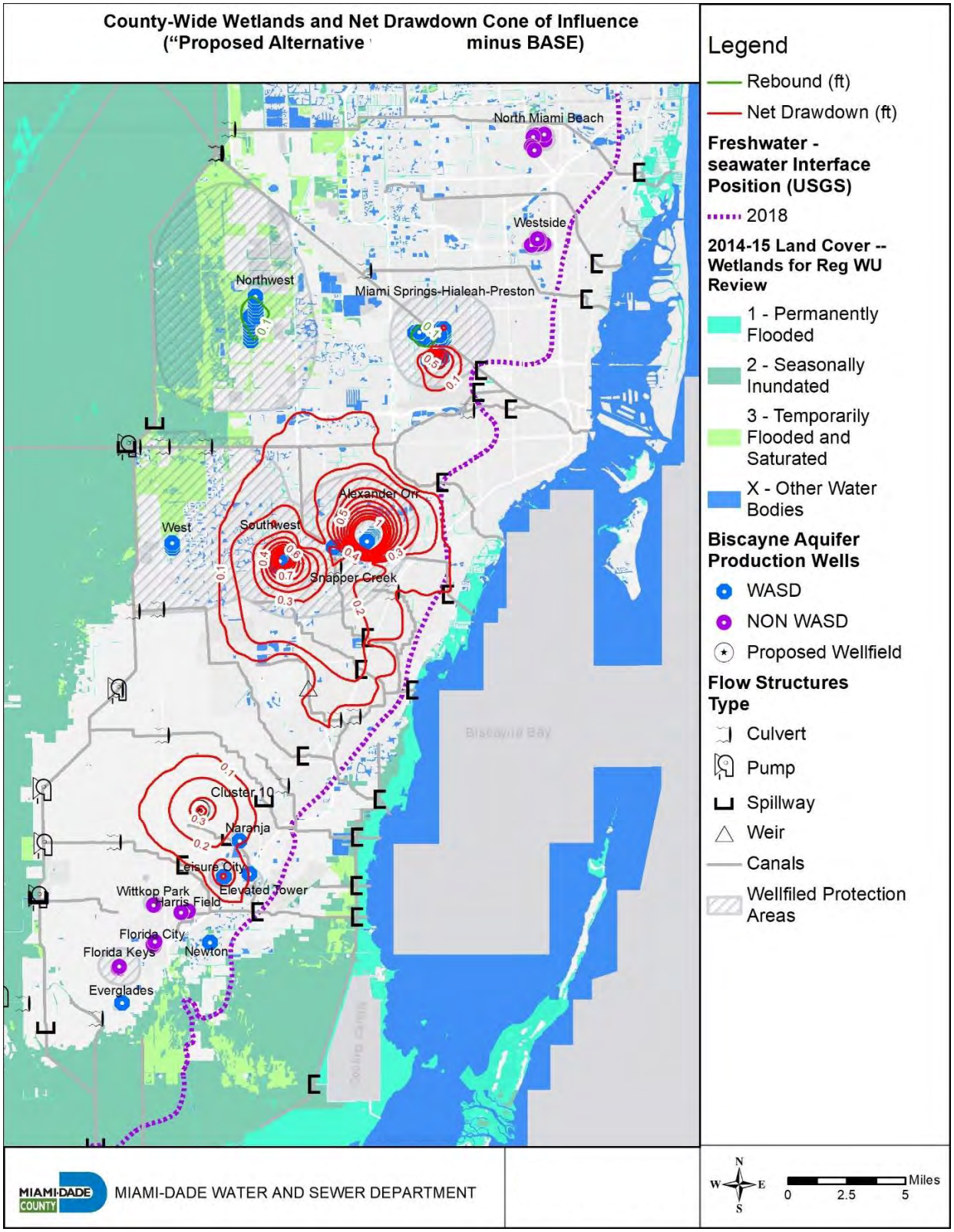


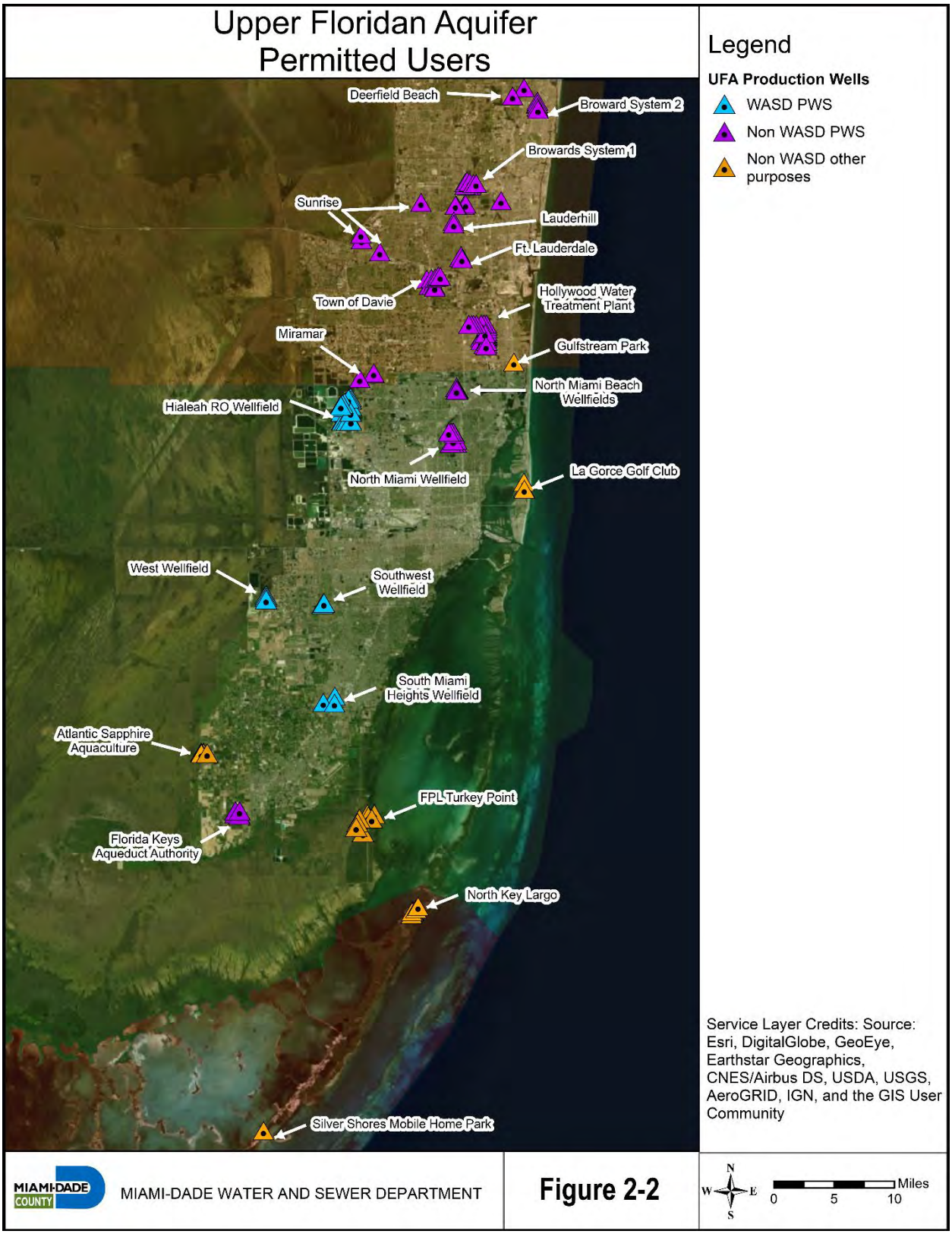
Table 6-8 Floridan Aquifer Monitoring Network

WELL ID	LOCATION	LATITUDE	LONGITUDE	BORE HOLE DEPTH (ft)[1]	CASING DEPTH (ft)[2]	MONITORING INTERVAL (ft)[2]	PRESSURE LEVEL MONITOR FREQUENCY	WATER QUALITY MONITOR FREQUENCY
DF-1[1]	N. Krome Ave	25 54 35.831	80 28 06.935	1800	TZ	516-620, 1140-1230, 1700-1800	Maintained by SFWMD	
ENP-100[1]	Everglades National Park	25 22 57.096	80 36 10.71	1333	620	620-1333	Maintained by USGS	
FKAA[1]	Florida City	25 26 36	80 30 31	1500	1067	880-1353	Maintained by FKAA	
FPL[1]	FPL Property	25 21 01.416	80 24 28.204	2304	TZ	1120-1330, 1535-1920, 2100-2304	Maintained by FPL	
NMB[1]	NMB	25 56 58.44	80 12 54.909	1900	1020	1020-1900	Maintained by NMB	
Atlantic Sapphire Aquaculture[1]	Atlantic Sapphire Aquaculture	25 30 53.33	80 33 19.32	1670	1650	1650-1670	Maintained by Atlantic Sapphire Aquaculture	
La Gorce Golf Club[1]	La Gorce Golf Club	25 50 12.31	80 07 46.12	950	840	840-950	Maintained by La Gorce Golf Club	
NDWWTP FA-3N[u]	NDWWTP	25 55 05.037	80 08 49.465	1510	DZ	1160-1245 1410-1510	Continuous	Monthly
SDWWTP FA-17	SDWWTP	25 33 04.96	80 20 49.05	1085*	985*	985-1085*	Continuous	Monthly
ASR MW-1[u]	WWF	25 42 57.24	80 28 18.50	1396	DZ	1396	Continuous	Monthly
SWWF MW-1[u]	SWWF	25 41 19.30	80 23 54.87	1200	DZ	845-900, 1110-1200	Continuous	Monthly
CHI Monitoring Well[u]	CHI of South Florida	25 33 52.88	80 21 22.07	1900	DZ	1000-1100, 1400-1500	Continuous	Monthly
Hialeah Ro[u]	Hialeah RO WTP	25 55 27.78	80 22 4.58	2260	DZ	1900-1950, 2190-2260	Continuous	Monthly

Highlighted wells proposed for MDWASD Floridan Aquifer monitoring network
1. Data for Wells from DBHydro, wells not in MDWASD network
2. Feet Below Land Surface (bls)
u. Only Upper Monitoring Zone is sampled
TZ - tri-zone
DZ - dual zone
* Proposed

Exhibit 12A. County-Wide Wetlands and Net Drawdown Cone of Influence ("Proposed Alternative" minus BASE)




Upper Floridan Aquifer
Permitted Users
Legend
UFA Production Wells
WASD PWS
Non WASD PWS
Non WASD other purposes
Deerfield Beach
Broward System 2
Browards System 1
Sunrise
Lauderhill
Ft. Lauderdale
Town of Davie
Hollywood Water Treatment Plant
Miramar
Gulfstream Park
North Miami Beach Wellfields
Hialeah RO Wellfield
North Miami Wellfield
La Gorce Golf Club
West Wellfield
Southwest Wellfield
South Miami Heights Wellfield
Atlantic Sapphire Aquaculture
FPL Turkey Point
Florida Keys Aqueduct Authority
North Key Largo
Silver Shores Mobile Home Park
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
MIAMI-DADE COUNTY
MIAMI-DADE WATER AND SEWER DEPARTMENT
Figure 2-2
N
W
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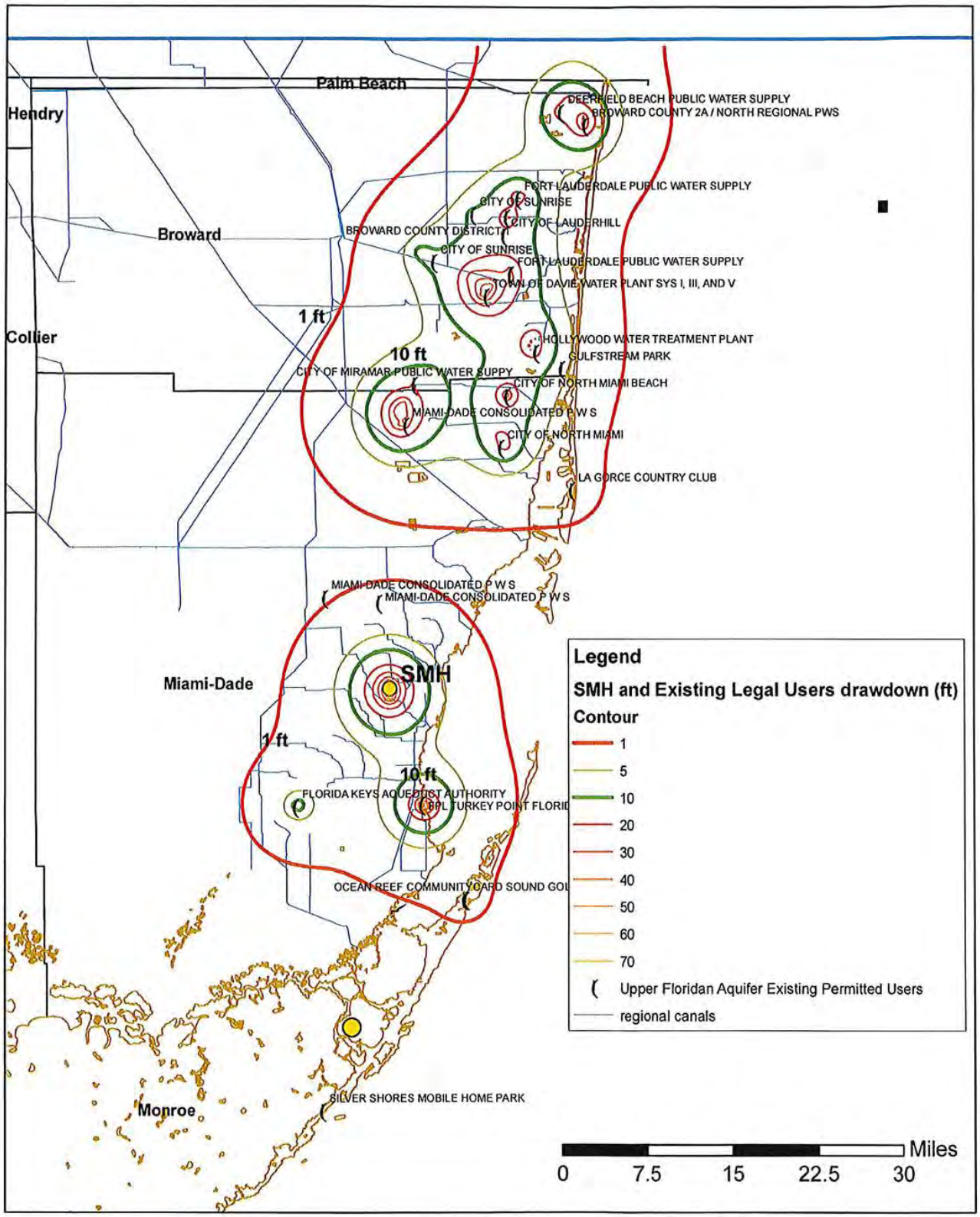
Miles
0
5
10



Miami-Dade County
Water and Sewer Department
3071 SW 38 Ave
Miami FL 33146

Figure 7.

SMH at 24 mgd
and Existing legal users drawdown

EXHIBIT 26E

8.0 Salt Water Intrusion

As part of Special Permit Condition #37 Saltwater intrusion in Miami-Dade County is monitored through a Joint Funding Agreement between Miami Dade County and the U.S. Geological Survey (USGS). The saltwater intrusion is monitored by a network of small diameter wells drilled to the base of the aquifer. The salt front is identified as the location, at the base of the aquifer, of the 1,000 milligrams/per liter (mg/L) isochlor, or line of equal chloride concentration of 1,000 mg/L). WASD public wellfields locations and salt front line are found in **Figure 8-1**. Stations names and locations for the monitoring network are depicted from north to south along the eastern portion of Miami-Dade County on **Figure 8-2**, **8-3**, and **8-4**, respectively. Groundwater levels and chloride levels throughout Miami-Dade County are monitored through the 5-year Water Resource Joint Funding Agreement (JFA) with the USGS (currently JFA 17ESFL000000108). A copy of this JFA is included in **Attachment 4**.

Sampling of the monitor wells is done by the USGS, under a cooperative agreement with Miami-Dade County for wells currently included in the salt front monitoring program on the schedule indicated on **Table 8-1.** The data derived from that sampling is used by the USGS to identify any significant movement of the salt front, and to map the location of the salt front if a significant movement is evident. WASD will continue to report the data to SFWMD quarterly, as part of the WUP #13-00017-W requirements.

The network of monitoring wells has been modified over the years and will continue to improve, depending on the changing needs of the county and on changing hydrologic conditions. More wells have been drilled to monitor areas where the salt front is moving, and sampling of those wells already by-passed by the salt front has been discontinued. Other wells have been drilled around the operating wellfields to provide additional protection. The monitoring and testing program also include annual induction logging of several wells. These electric logs show the variations in the bulk conductivity of the well water with changes in well depth, and from that information the effects of formational stratigraphy and hydraulic conductivity on the intrusion patterns can be determined. The existing salt water front monitoring network is included as **Table 8-1**. which includes well IDs, construction details, type of monitoring, sampling frequency, and the 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, and 2019 chloride data currently used in the salt front delineation program.

Table 8-1 Salt Front Monitoring Wells

USGS ID	STATION NAME	LATITUDE	LONGITUDE	SITE USE	HOLE DEPTH (ft)[1]	WELL DEPTH (ft)[2]	CASING DEPTH (ft) [1&2]	Current GWL measurement Freq.	Current Cl Sampling Freq.	Induction Log Done
253831080180204	G-3313E	25 38 34.4	-80 18 4.7	observation/monitoring	114	114	32	quarterly	quarterly	No
253831080180204	G-3313C	25 38 35.1	-80 18 4.8	observation/monitoring	110	110	open hole	quarterly	quarterly	No
254946080172601	G-3250	25 49 46	-80 17 26	observation/monitoring	116	116	106	monthly	monthly	Yes
254457080160301	G-3229	25 44 57	-80 16 3	observation/monitoring	85	85	A	monthly	monthly	No
255222080123001	G-3224	25 52 22	-80 12 30	observation/monitoring	95.5	95.5	94	monthly	monthly	No
253202080232601	G-3162	25 31 32	-80 23 25	observation/monitoring	92	92	82	quarterly	quarterly	No
254833080155801	G-1354	25 48 33	-80 15 58	observation/monitoring	104	104	91	monthly	quarterly	No
254813080161501	G-1351	25 48 13	-80 16 15	observation/monitoring	103	103	100	monthly	monthly	No
252947080235301	G-1180	25 29 47	-80 23 53	observation/monitoring	67	67	open hole	monthly	monthly	No
254106080174601	G-1009B	25 41 6	-80 17 46	observation/monitoring	100	100	NA	monthly	monthly	No
253652080183701	G-939	25 36 53.8	-80 18 35.4	observation/monitoring	61	61	NA	twice a year	twice a year	No
254201080173001	G-901	25 45 3	-80 16 54.4	observation/monitoring	96	96	95	twice a year	twice a year	No
253710080184701	G-3611	25 37 10.4	-80 18 45.4	observation/monitoring	100	100	95	quarterly	quarterly	Yes
254107080165201	G-896	25 41 7	-80 16 52	observation/monitoring	74	74	60	monthly	monthly	No
255350080105801	G-894	25 53 51.7	-80 10 57.2	observation/monitoring	76	76	75	monthly	monthly	No
254841080164401	G-571	25 48 41	-80 16 44	observation/monitoring	94.5	94.5	95	monthly	monthly	No
254855080163701	G-548	25 48 55.9	-80 16 36.4	observation/monitoring	97	97	91	monthly	twice a year	No
255315080111501	F-279	25 53 17.8	-80 11 14.6	observation/monitoring	117	117	NA	monthly	quarterly	No
254943080121501	F-45	25 49 43	-80 12 15	observation/monitoring	84.9	84.9	84	monthly	monthly	No
253253080221201	G-3885	25 32 53.1	-80 22 12.7	observation/monitoring	91	86	86	monthly	monthly	No
2535270801195400	G-3886	25 35 27.9	-80 19 54.2	observation/monitoring	109	101	101	monthly	monthly	No
253924080174601	G-3887	25 39 24.7	-80 17 46.8	observation/monitoring	134	130	130	monthly	monthly	No
254542080145901	G-3888	25 39 2407	-80 14 5908	observation/monitoring	149	144	144	monthly	monthly	No
255011080124501	G-3947	25 50 11.3	-80 12 45.4	observation/monitoring	229	227	200	monthly	monthly	No
255515080103601	G-3948	25 55 14.9	-80 10 36.2	observation/monitoring	279	277	273	monthly	monthly	No
255733080195601	G-3949	25 57 33.6	-80 9 56.5	observation/monitoring	349	349	325	monthly	monthly	No
254341080174001	G-3606	25 41 41.7	-80 17 34.5	observation/monitoring	120	120	120	continuous	NA	NA
NA	G-3996	25 39 48.51	-80 17 41.61	observation/monitoring	140	130.2	100.2	NA	quarterly	NA
NA	G-3997	25 28 12.97	-80 25 11.83	observation/monitoring	123	118	73	NA	NA	NA
NA	G-3998	24 26 25.69	-80 26 10.16	observation/monitoring	121	110.3	65	NA	quarterly/monthly	NA
NA	G-3999	24 25 05.95	-80 26 09.95	observation/monitoring	110	106.3	66	NA	quarterly/monthly	NA
NA	G-5004	25 20 36.49	-80 29 34.85	observation/monitoring	100	95	50	NA	NA	NA
NA	G-5005	25 47 06.70	-80 15 57.97	observation/monitoring	NA	180	NA	NA	NA	NA
NA	G-5006	25 54 15.04	-80 11 43.93	observation/monitoring	NA	205	185	NA	NA	NA
NA	G-5007	25 56 38.66	-80 10 03.09	observation/monitoring	NA	298.5	NA	NA	NA	NA

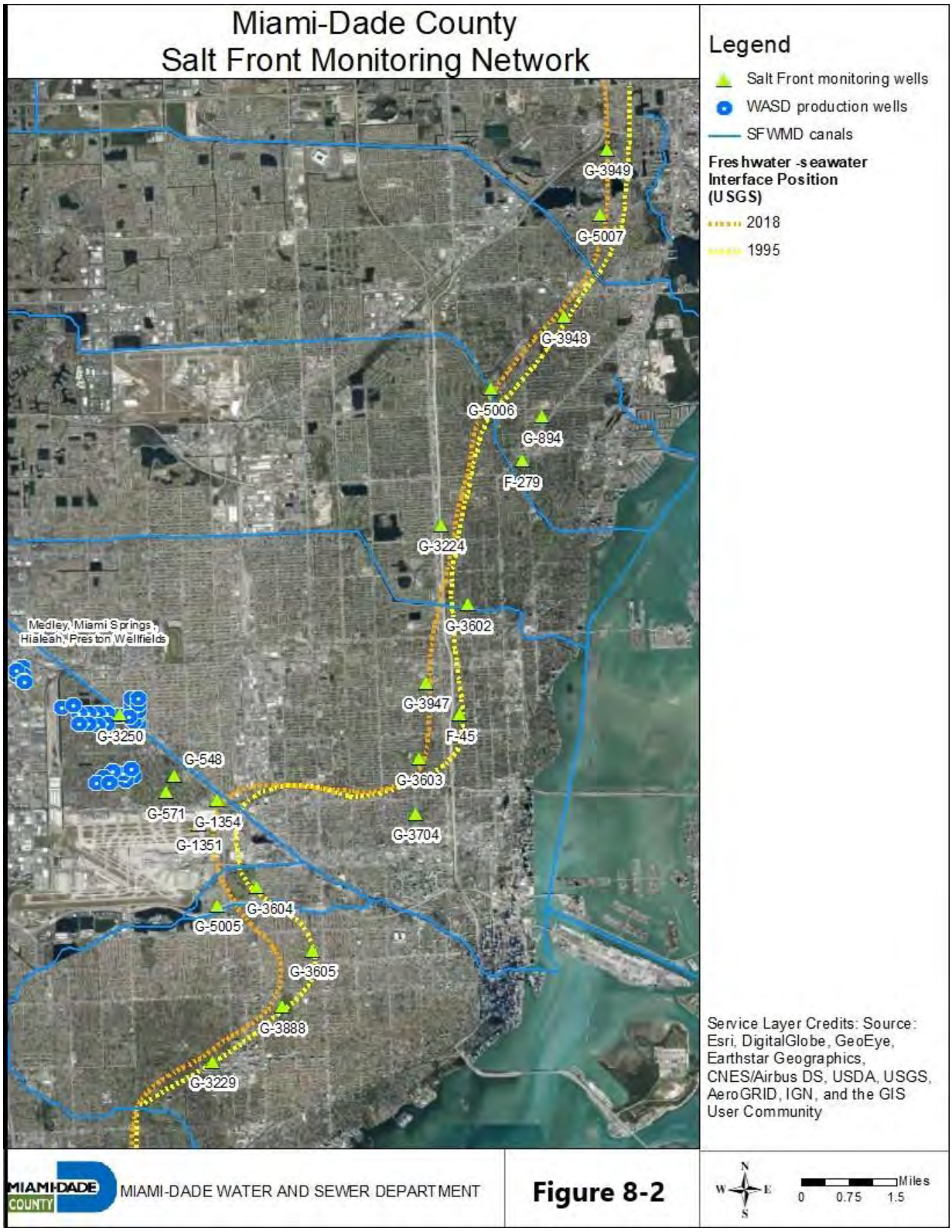
Notes:
1. Per USGS, depth of the casing is not precisely known.
2. bls: below land surface
3. GWL: groundwater level
4. Cl: chloride
5. NA: not available

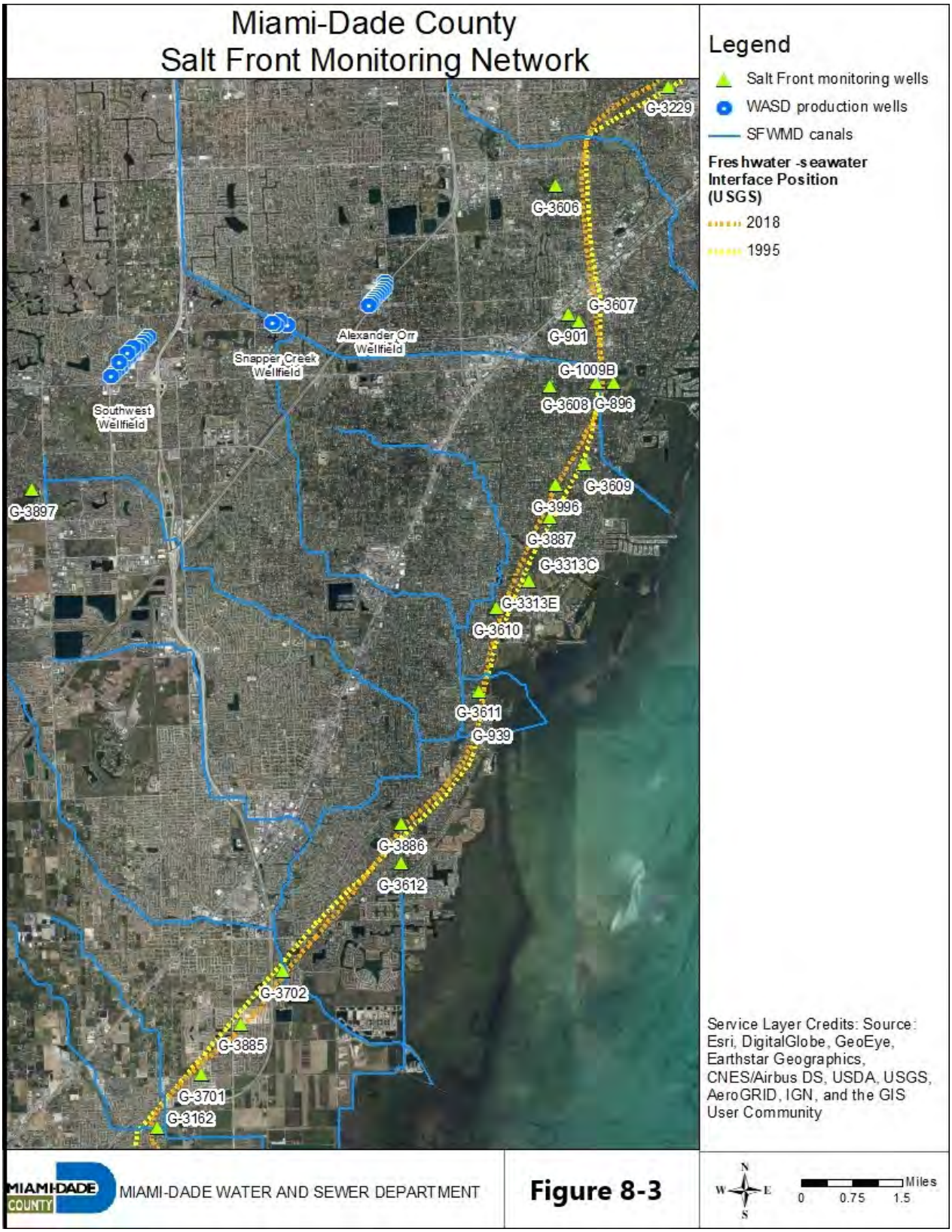
Table 8-1 Salt Front Monitoring Wells (Cont.)

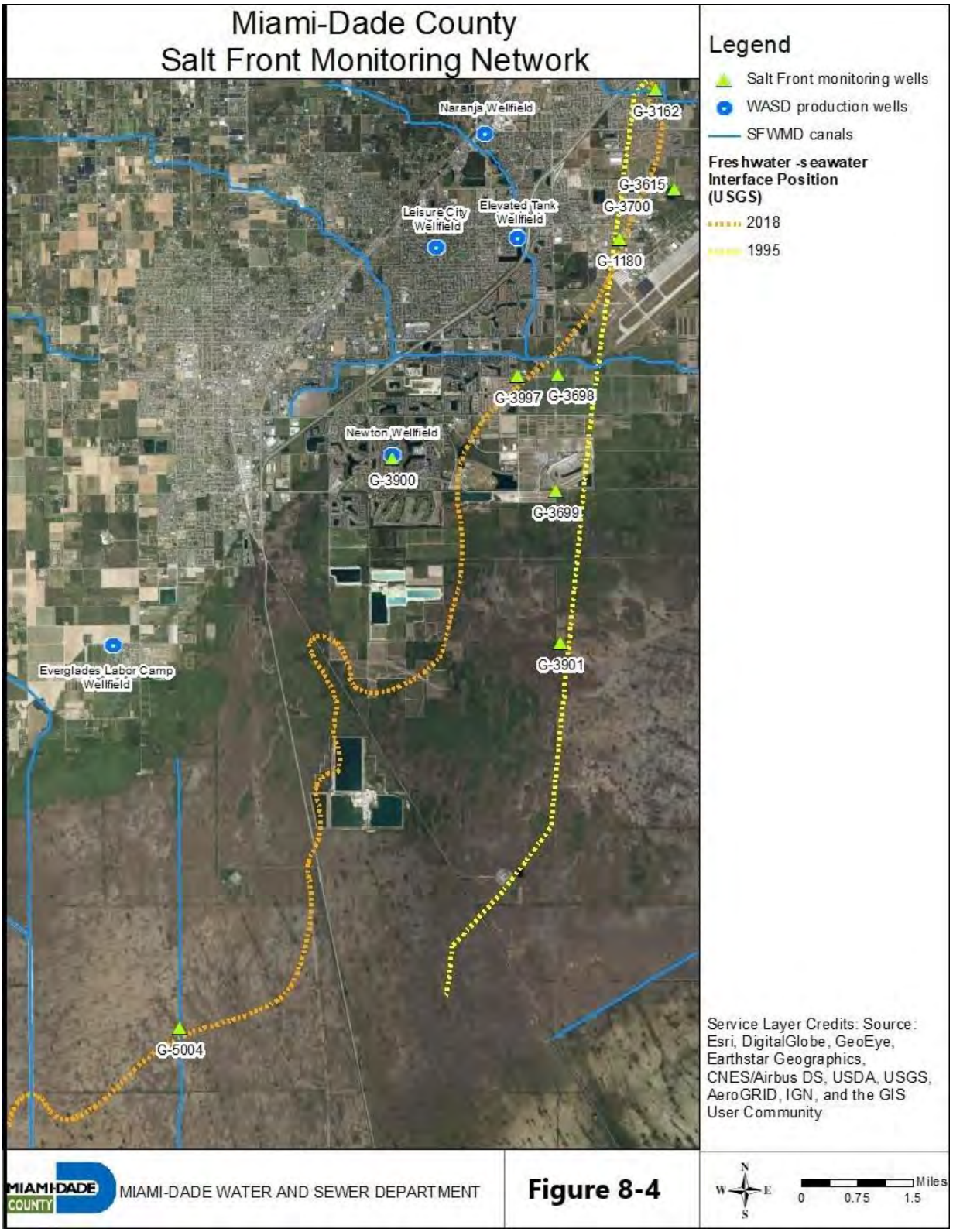
USGS ID	STATION NAME	2007 Chloride (mg/l)	2008 Chloride (mgl/)	2009 Chloride (mgl/)	2010 Chloride (mgl/)	2011 Chloride (mgl/)	2012 Chloride (mgl/)	2013 Chloride (mgl/)	2014 Chloride (mgl/)	2015 Chloride (mgl/)	2016 Chloride (mgl/)	2017 Chloride (mgl/)	2018 Chloride (mgl/)	2019 Chloride (mgl/)	2020 Chloride (mgl/)
253831080180204	G-3313E	5,100	5,400	1,500	713	5,600	4,600	4,800	5,200	5,100	4,949	6,015	6,367	6,175	6,330
253831080180204	G-3313C	4,000	4,200	4,250	4,400	4,717	4,351	4,533	4,875	5,167	6,010	5,113	5,288	5,459	5,520
254946080172601	G-3250	68	131	139	176	181	200	37	134	139	156	174	156	78	72
254457080160301	G-3229	700	807	900	1,217	1,606	1,883	2,108	2,250	2,442	2,518	2,661	2,946	3,084	3,240
255222080123001	G-3224	44	39	41	41	42	41	35	35	35	34	35	35	35	32
253202080232601	G-3162	1,140	1,208	1,284	1,303	1,280	1,267	1,425	1,542	1,475	1,368	1,327	1,345	1,273	1,250
254833080155801	G-1354	56	53	516	48	49	58	135	177	195	518	676	704	471	597
254813080161501	G-1351	540	530	520	503	492	474	436	399	407	382	382	362	349	350
252947080235301	G-1180	32	30	17	27	25	17	37	20	19	20	21	30	31	31
254106080174601	G-1009B	50	59	59	62	60	75	74	72	80	102	89	87	86	91
253652080183701	G-939	3,100	3,050	3,333	3,750	3,900	3,808	4,108	3,883	3,767	3,792	3,776	3,818	3,539	3,291
254201080173001	G-901	2,325	2,375	2,550	2,438	2,550	2,667	3,058	3,527	4,650	5,464	6,021	6,321	6,884	6,998
253710080184701	G-3611	200	173	172	170	169	165	168	165	160	153	196	217	436	701
254107080165201	G-896	245	247	235	248	245	258	251	246	347	561	508	560	754	805
255350080105801	G-894	24	21	21	22	23	21	17	15	15	15	15	15	15	16
254841080164401	G-571	32	32	30	34	35	34	28	27	27	26	27	27	30	30
254855080163701	G-548	41	40	36	34	32	31	30	29	33	31	32	33	34	32
255315080111501	F-279	3,150	3,300	3,383	3,475	3,583	3,675	3,892	4,117	4,067	4,191	4,378	4,593	4,641	4,943
254943080121501	F-45	104	87	97	97	113	118	127	130	143	157	170	176	171	136
253253080221201	G-3885	NA	NA	NA	NA	36	36	31	30	30	28	27	27	27	28
253527080195400	G-3886	NA	NA	NA	NA	51	49	47	46	47	46	46	47	47	47
253924080174601	G-3887	NA	NA	NA	NA	2,238	2,292	2,442	2,508	2,692	2,788	3,002	3,227	3,358	3,540
254542080145901	G-3888	NA	NA	NA	NA	5,029	5,225	5,458	5,592	6,075	6,318	6,617	6,892	7,146	7,196
255011080124501	G-3947	NA	NA	NA	Under construction	28	25	21	21	21	20	20	21	22	21
255515080103601	G-3948	NA	NA	NA	Under construction	3,992		4,308	4,275	4,318	4,458	4,636	4,724	4,682	4,737
255733080195601	G-3949	NA	NA	NA	Under construction	115	121	116	118	122	129	159	211	280	380
254341080174001	G-3606	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	G-3996	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	388	795	1,237
NA	G-3997	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	G-3998	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	39	40	40
NA	G-3999	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	509	1,166	2,124
NA	G-5004	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	G-5005	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	G-5006	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
NA	G-5007	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Notes:
1. Per USGS, depth of the casing is not precisely known.
2. bls: below land surface
3. GWL: groundwater level
4. Cl: chloride
5. NA: not available

Miami-Dade County
Salt Front Monitoring Network
Legend
Salt Front monitoring wells
WASD production wells
SFWMD canals
Freshwater -seawater Interface Position (USGS)
2018
1995
Medley, Miami Springs, Hialeah, Preston Wellfields
Northwest Wellfield
Alexander Orr Wellfield
Southwest Wellfield
West Wellfield
Snapper Creek Wellfield
South Dade Wellfields
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
MIAMI-DADE COUNTY
MIAMI-DADE WATER AND SEWER DEPARTMENT
Figure 8-1
N
W
E
S
Miles
0
2.5
5


Miami-Dade County
Salt Front Monitoring Network
Legend
Salt Front monitoring wells
WASD production wells
SFWMD canals
Freshwater -seawater Interface Position (USGS)
2018
1995
G-3949
G-5007
G-3948
G-5006
G-894
F-279
G-3224
G-3602
Medley, Miami Springs, Hialeah, Preston Wellfields
G-3947
F-45
G-3250
G-548
G-3603
G-571
G-1354
G-1351
G-3704
G-3604
G-5005
G-3605
G-3888
G-3229
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
MIAMI-DADE COUNTY
MIAMI-DADE WATER AND SEWER DEPARTMENT
Figure 8-2
N
W
E
S
Miles
0
0.75
1.5


Miami-Dade County
Salt Front Monitoring Network
Legend
Salt Front monitoring wells
WASD production wells
SFWMD canals
Freshwater -seawater Interface Position (USGS)
2018
1995
G-3229
G-3606
G-3607
G-901
G-1009B
G-3608
G-896
G-3609
G-3996
G-3887
G-3313C
G-3313E
G-3610
G-3611
G-939
G-3886
G-3612
G-3702
G-3885
G-3701
G-3162
G-3897
Alexander Orr Wellfield
Snapper Creek Wellfield
Southwest Wellfield
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
MIAMI-DADE COUNTY
MIAMI-DADE WATER AND SEWER DEPARTMENT
Figure 8-3
N
W
E
S
Miles
0
0.75
1.5


Miami-Dade County
Salt Front Monitoring Network
Legend
Salt Front monitoring wells
WASD production wells
SFWMD canals
Freshwater -seawater Interface Position (USGS)
2018
1995
Naranja Wellfield
Leisure City Wellfield
Elevated Tank Wellfield
Newton Wellfield
Everglades Labor Camp Wellfield
G-3162
G-3615
G-3700
G-1180
G-3997
G-3698
G-3900
G-3699
G-3901
G-5004
Service Layer Credits: Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community
MIAMI-DADE COUNTY
MIAMI-DADE WATER AND SEWER DEPARTMENT
Figure 8-4
N
W
E
S
Miles
0
0.75
1.5

13-00017-W Chloride Monitoring

WELL NAME	ID	CHLORIDE COLLECTION FREQUENCY	CHLORIDE SUBMITTAL FREQUENCY
SW-2W	257879	every 4 months	every 4 months
F-45	137231	monthly	quarterly
F-279	257889	monthly	quarterly
G-548	257886	monthly	quarterly
G-571	257885	monthly	quarterly
G-894	137249	monthly	quarterly
G-896	137251	monthly	quarterly
G-901	257884	monthly	quarterly
G-939	257883	monthly	quarterly
G-1009B	217716	monthly	quarterly
G-1180	137233	monthly	quarterly
G-1351	137236	monthly	quarterly
G-1354	137237	monthly	quarterly
G-3224	217715	monthly	quarterly
G-3229	137241	monthly	quarterly
G-3250	137242	monthly	quarterly
G-3313C	257881	monthly	quarterly
G-3601-S (replacement well)	286383	monthly	quarterly
G-3606	217707	monthly	quarterly
G-3611	217703	monthly	quarterly
G-3885	257890	monthly	quarterly
G-3886	257891	monthly	quarterly
G-3887A	257892	monthly	quarterly
G-3888A	257893	monthly	quarterly
G-3947	257895	monthly	quarterly
G-3948D	257896	monthly	quarterly
G-3949	257897	monthly	quarterly
FA-3N NDWWTP	217829	monthly	quarterly

WELL NAME	ID	CHLORIDE COLLECTION FREQUENCY	CHLORIDE SUBMITTAL FREQUENCY
FA-17	286359	monthly	quarterly
ASR MW-1 (WEST)	217831	monthly	quarterly
ASR MW-1 (SW)	217832	monthly	quarterly
CHI SDWWTP	217833	monthly	quarterly
HIA-DZMW-1-S	286377	monthly	quarterly
HIA-DZMW-1-D	286378	monthly	quarterly
SMHDZMW-1-S	286380	monthly	quarterly
SMHDZMW-1-D	286381	monthly	quarterly
G-3967	286382	monthly	quarterly
G-3966	286360	monthly	quarterly
G-3964	286364	monthly	quarterly
G-3965	286367	monthly	quarterly
G-3968	286368	monthly	quarterly
G-3969	286369	monthly	quarterly
G-354R	286355	monthly	quarterly
RO1 HIALEAH	217724	monthly	quarterly
G-3996	286370	monthly	quarterly
G-3997	286371	monthly	quarterly
G-3998	286372	monthly	quarterly
G-3999	286358	monthly	quarterly
G-5004	286373	monthly	quarterly
G-5005	286374	monthly	quarterly
G-5006	286375	monthly	quarterly
G-5007	286376	monthly	quarterly
SMH-F3	261792	monthly	quarterly
G-3162	137240	monthly	quarterly
G-3313E	217713	yearly	yearly

Exhibit 16A. County-Wide Groundwater Level Contours at 1.0 ft Intervals for BASE and "Proposed Alternative"

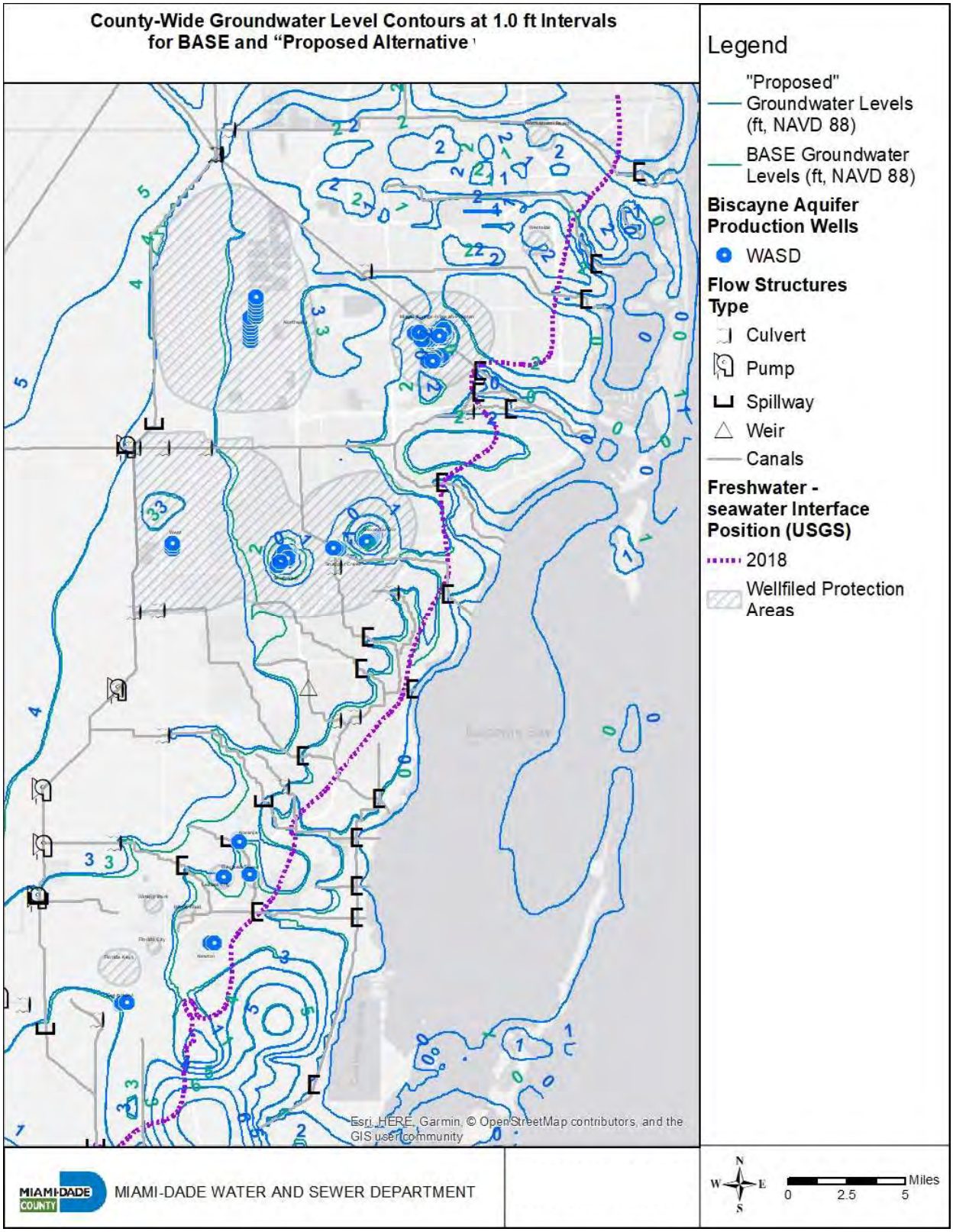


Exhibit 16B1. Zoom-In of Contaminated Sites and Groundwater Level Contours at 0.1 ft Intervals for BASE for Southwest, Snapper Creek and Alexander-Orr Wellfields

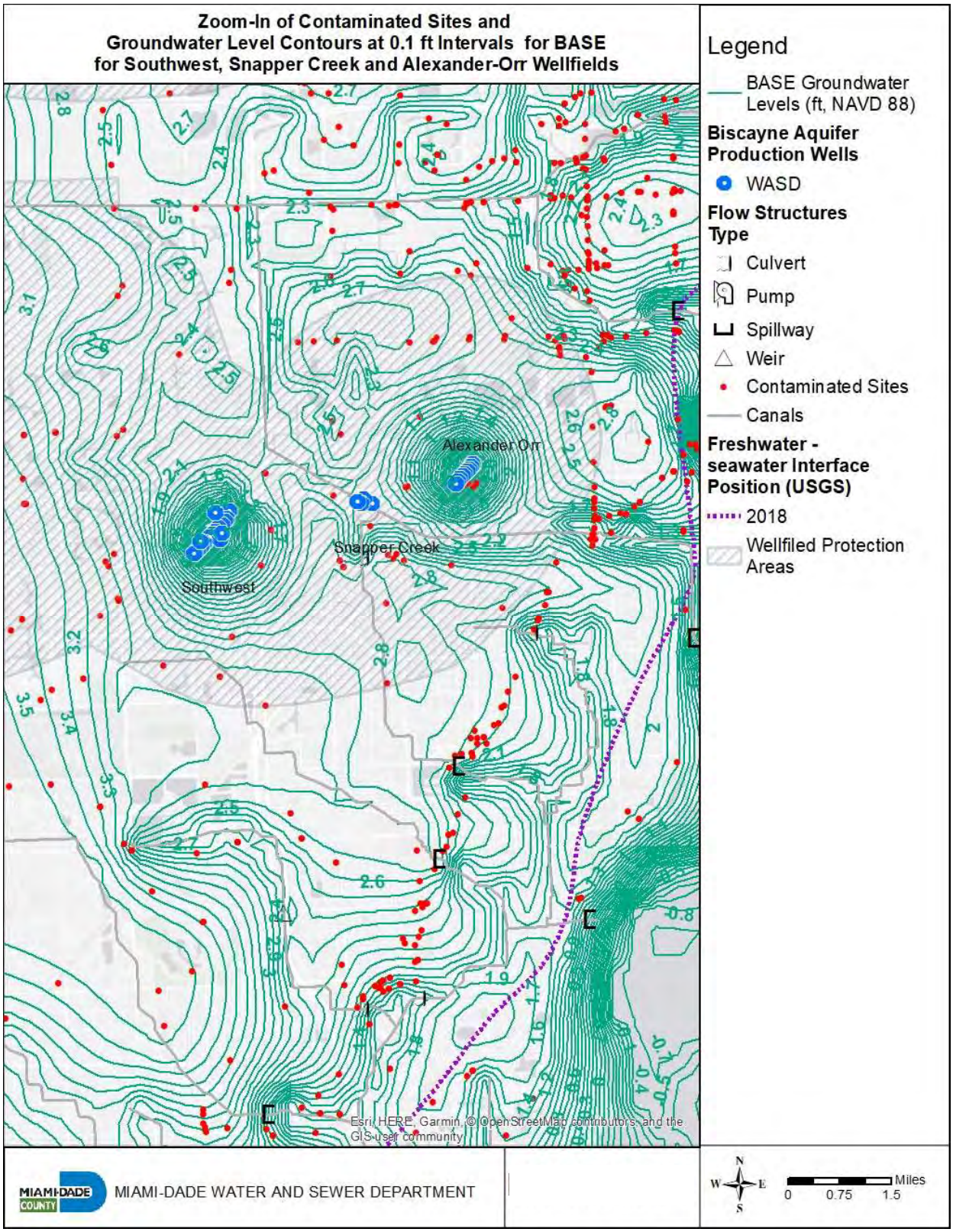


Exhibit 16B2. Zoom-In of Contaminated Sites, Groundwater Level Contours at 0.1 ft Intervals for "Proposed Alternative" for Southwest, Snapper Creek and Alexander-Orr Wellfields

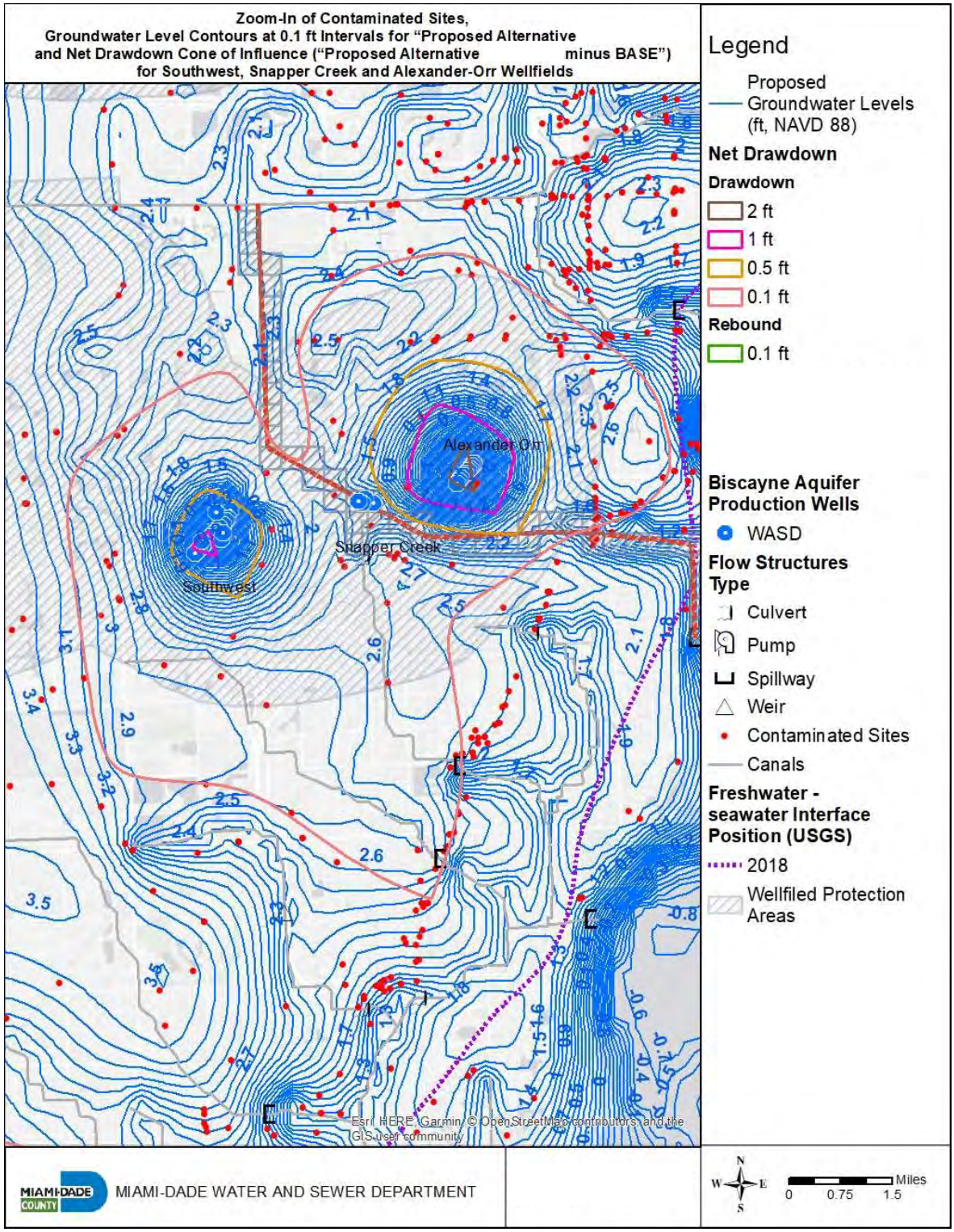


Exhibit 16C. Zoom-In of Contaminated Sites, Flow Vectors, Groundwater Level Contours at 0.1 ft Intervals and Net Drawdown Cone of Influence ("Proposed Alternative" minus BASE") for "Proposed Alternative" for Alexander Orr Wellfield

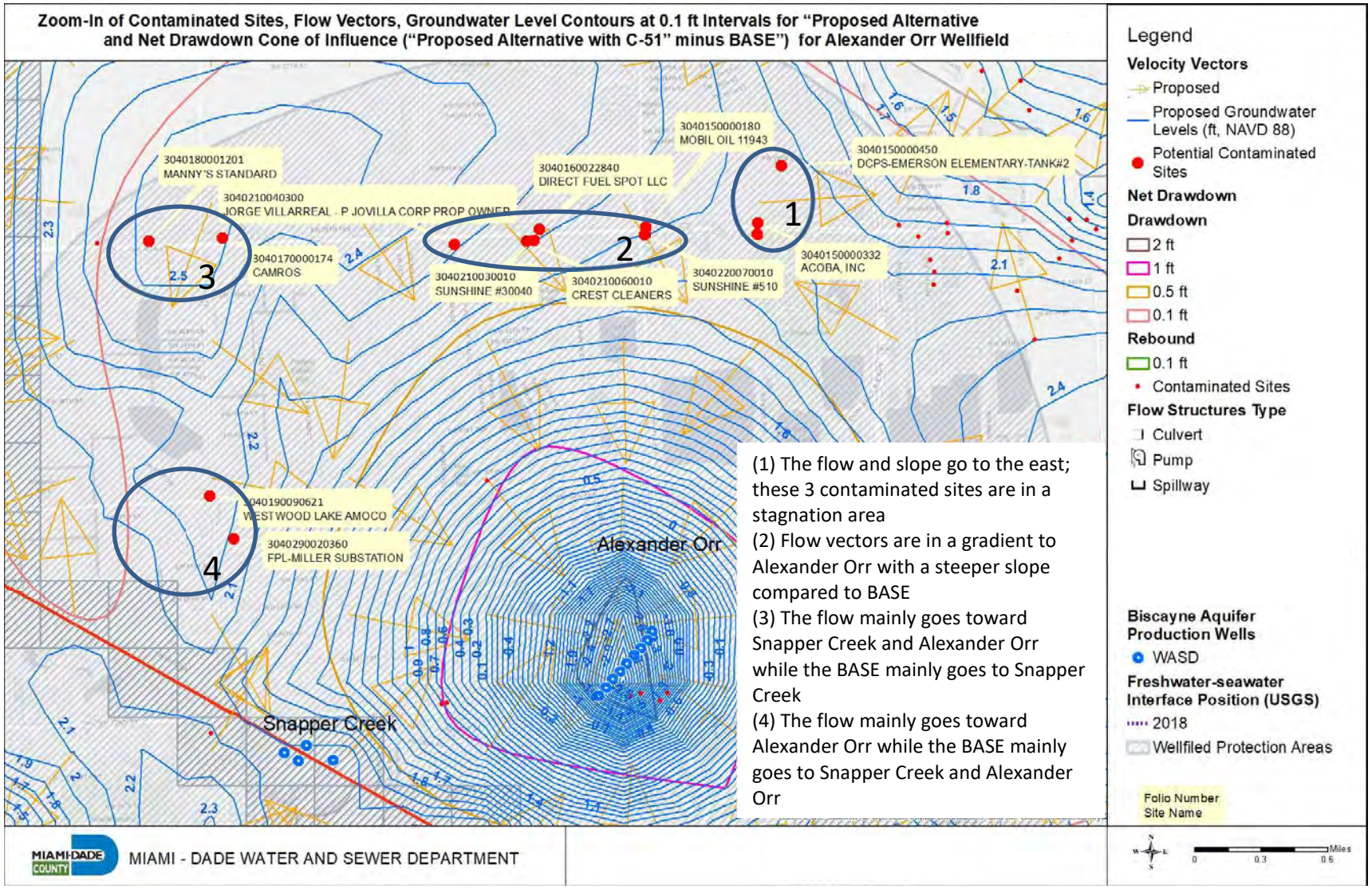
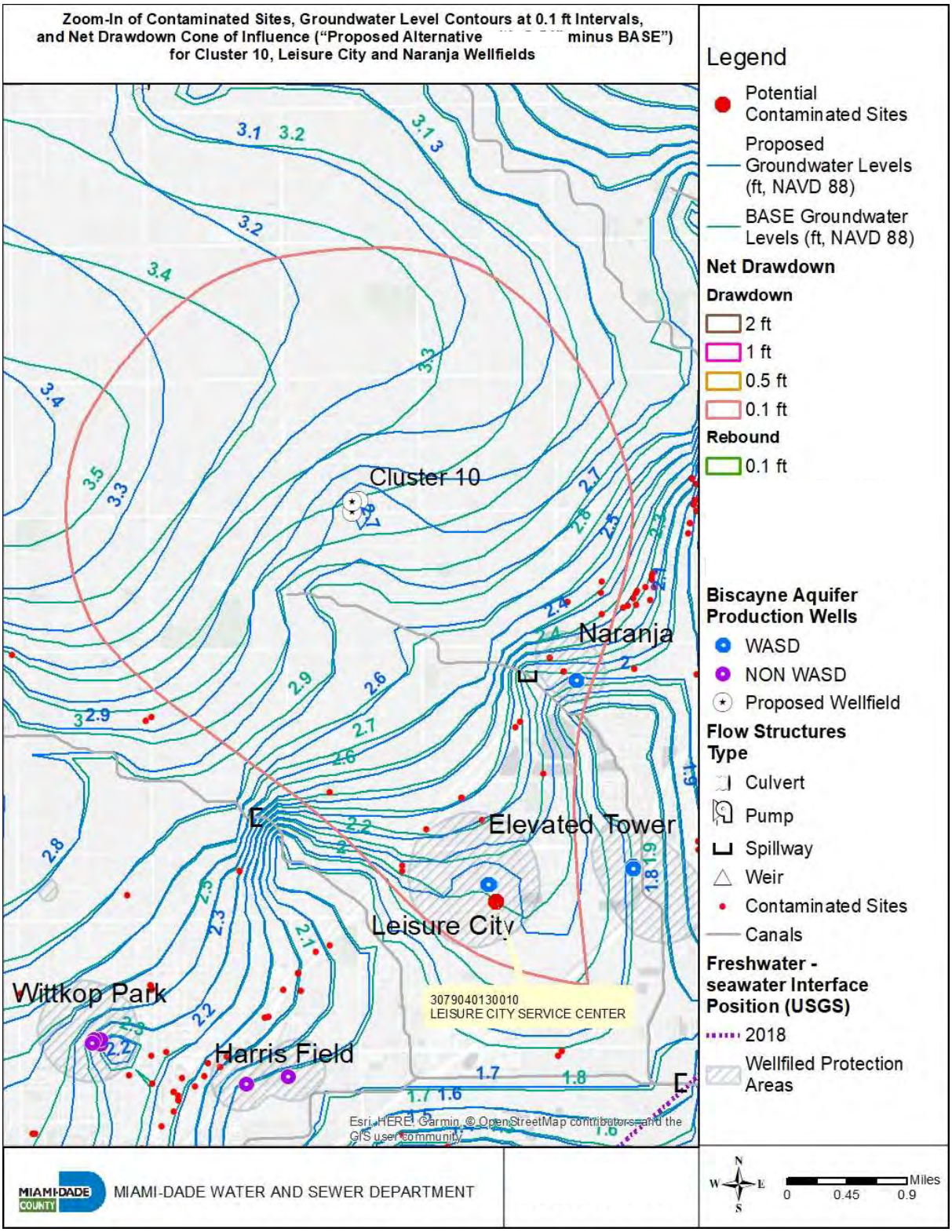


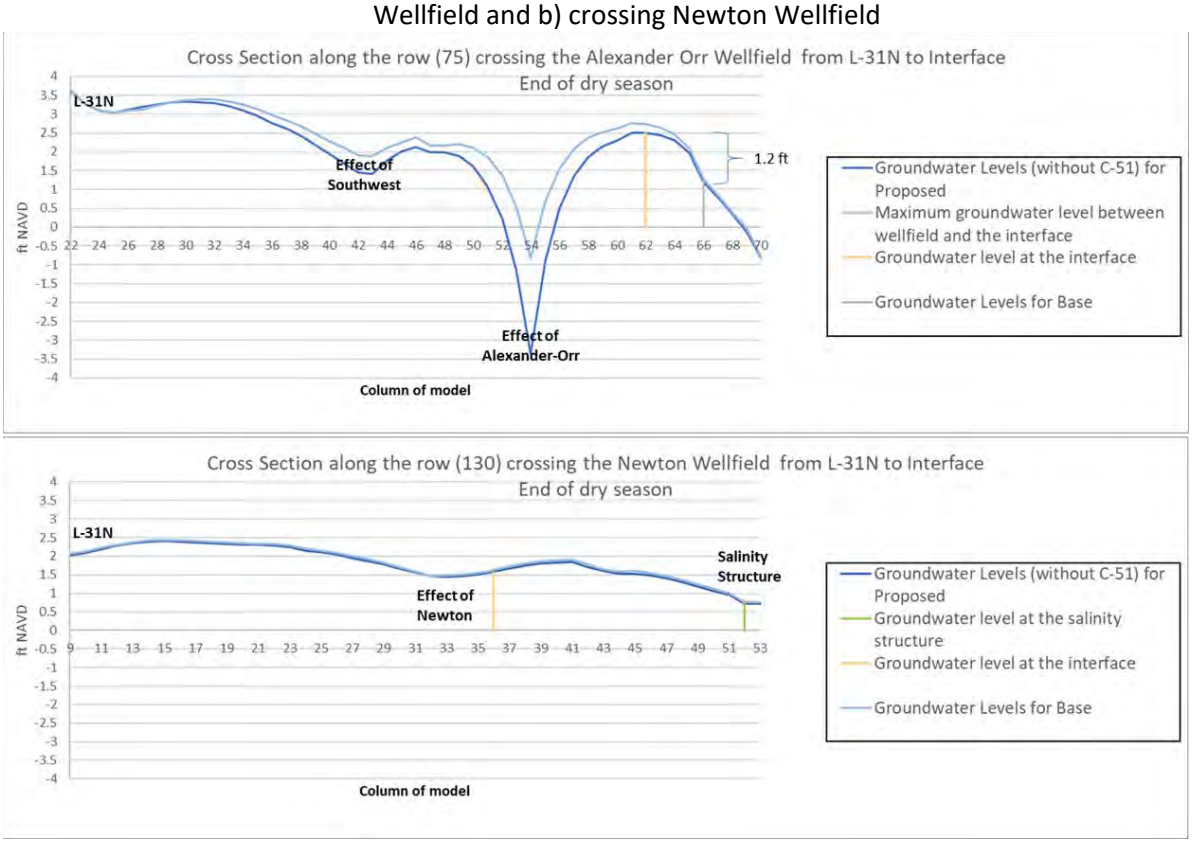
Exhibit 16D. Zoom-In of Contaminated Sites, Groundwater Level Contours at 0.1 ft Intervals, and Net Drawdown Cone of Influence ("Proposed Alternative" minus BASE") for Cluster 10, Leisure City and Naranja Wellfields

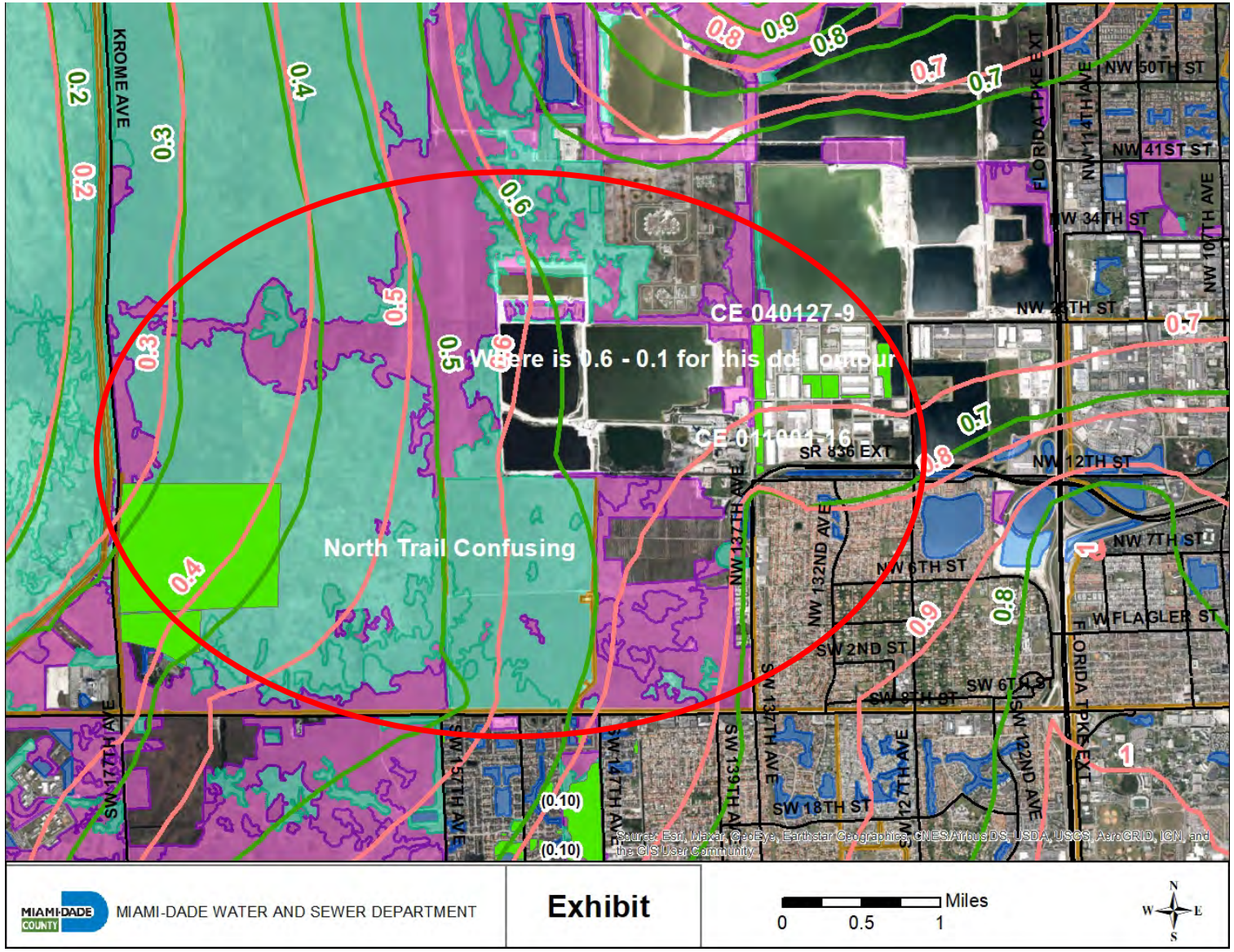


MDWASD-USGS is committed to continuing its existing saline water intrusion monitoring plan. Therefore, based on conservative modeling results, stable water quality, and continued monitoring, the potential for harm due to saline water intrusion is effectively minimized.

To assess sea-level rise and migration of the saltwater front WASD has a conducted detailed modeling effort in conjunction with the USGS. Modeling results indicate that using the NRC III SLR curve of the Southeast Florida Climate Compact Unified SLR projection, Miami-Springs Wellfield has the potential to start to see the effects of the salt-water-front migration by year 2040 if no modifications are made to the SFWMD operational schedules for the regional system. The Miami-Springs wellfield was constructed between 1924 and 1954 and utilizes the Biscayne aquifer as its primary water source. To monitor the saltwater front and to provide an early warning system WASD in conjunction with the USGS has developed a robust monitoring system that provides real time data. This real time data enables WASD to be operationally flexible and provides substantial time to adjust to changing conditions such as service demand and water quality. To address these changing conditions WASD will assess options that include adjusted wellfield withdrawal rates, rotational utilization of the wellfield to manage drawdown, and other management strategies to meet potable water demand. The intent will be to optimize wellfield withdrawal prioritizing the sustainability of the water supply while also utilizing future technologies as they become available.

Figure 1 (new) Cross Section along a model row at the end of the dry season a) crossing Alexander-Orr Wellfield and b) crossing Newton Wellfield



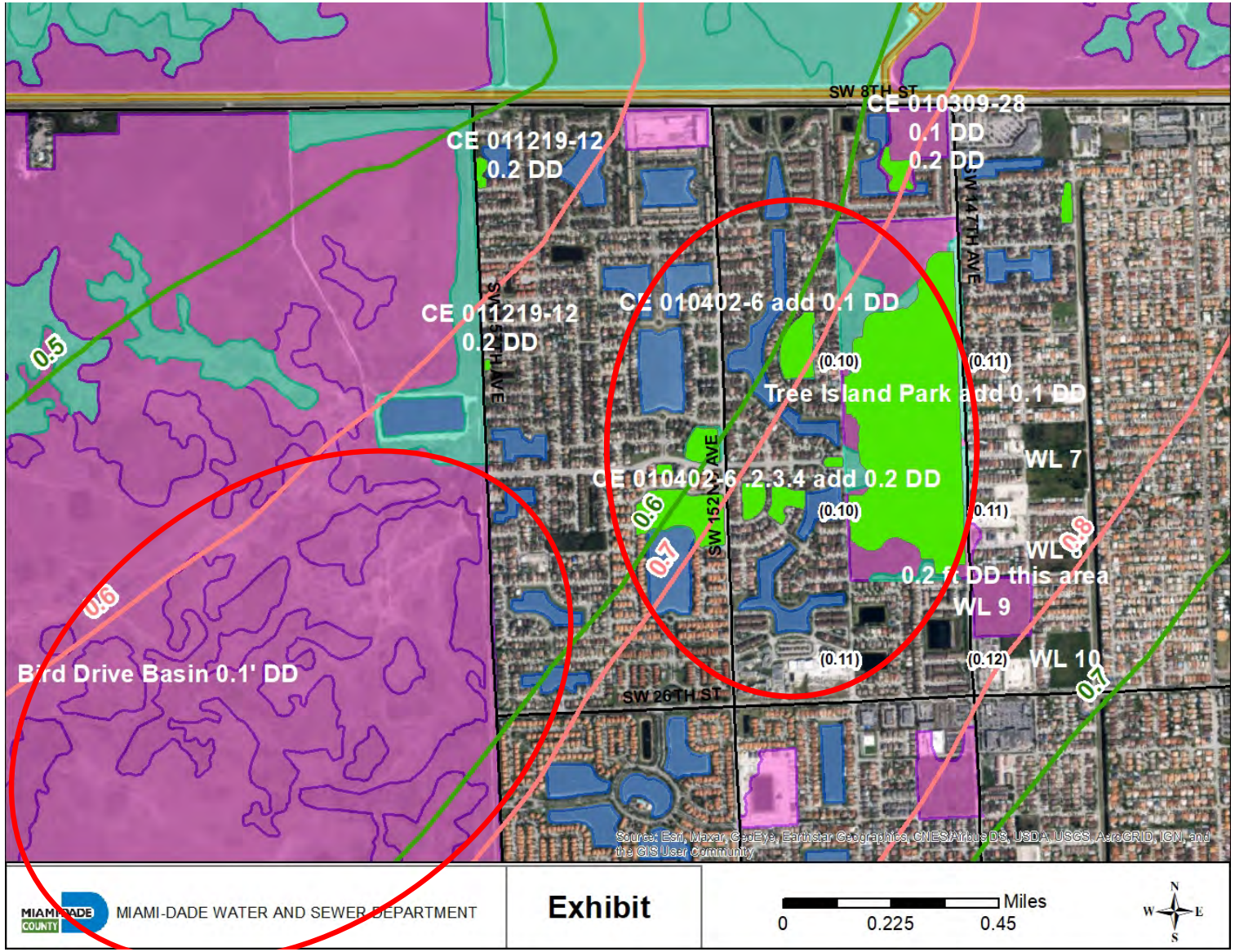


Slide 1
Location: Area between Krome Ave and Florida Turnpike, South of Northwest Wellfield

SFWMD question: Where is 0.6-0.1 for this dd contour?

WASD response: The area located between 0.6 and 0.7 ft dd contours was analyzed. Drawdown difference is less than 0.10 ft. so no drawdown difference is shown.

Note: ONLY drawdown differences greater than 0.10 ft within area of concern are shown in the map



Legend

- Cumulative Drawdown Alternative (ft)
- Cumulative Drawdown Base (ft)
- Major Roads
- ERP Applications - Conservation Easements

2014-15 Land Cover -- Wetlands for Reg WU Review

- 1 - Permanently Flooded
- 2 - Seasonally Inundated
- 3 - Temporarily Flooded and Saturated
- X - Other Water Bodies

Biscayne Aquifer Production Wells

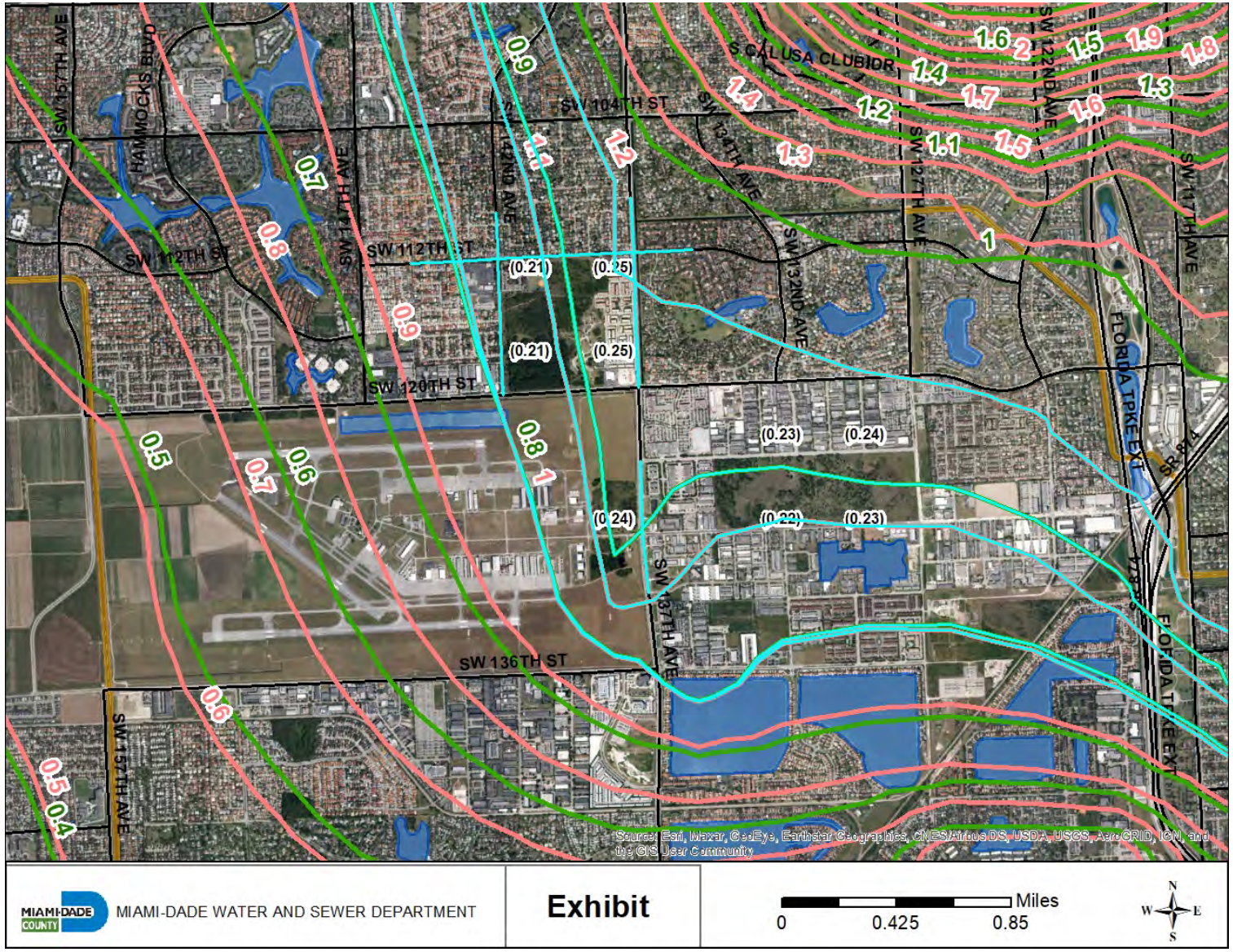
- WASD
- NON WASD

(0.25) - Drawdown Difference ft (Proposed - BASE)

Slide 2
Location: Tree Island Park near Bird Drive Basin
SFWMD question: Drawdown for wetlands

WASD response: Only Tree Island Park, WL 7, WL 8, WL 9 and WL 10 have drawdown difference lower than 0.12 ft as shown in the map. For other areas of concern drawdown difference is less than 0.10 ft.

Note: ONLY drawdown differences greater than 0.10 ft within area of concern are shown in the map



Legend

- Cumulative Drawdown Alternative (ft)
- Cumulative Drawdown Base (ft)
- Major Roads
- ERP Applications - Conservation Easements

2014-15 Land Cover -- Wetlands for Reg WU Review

- 1 - Permanently Flooded
- 2 - Seasonally Inundated
- 3 - Temporarily Flooded and Saturated
- X - Other Water Bodies

Biscayne Aquifer Production Wells

- WASD
- NON WASD

(0.25) - Drawdown Difference ft (Proposed - BASE)

Slide 3
Location: Near Dean International Flight School, South of Southwest Wellfield
SFWMD question: Drawdown for wetlands

WASD response: Drawdown difference of 0.25 ft were observed.

Note: ONLY drawdown differences greater than 0.10 ft within area of concern are shown in the map

Legend

- Cumulative Drawdown Alternative (ft)
- Cumulative Drawdown Base (ft)
- Major Roads
- ERP Applications - Conservation Easements

2014-15 Land Cover -- Wetlands for Reg WU Review

- 1 - Permanently Flooded
- 2 - Seasonally Inundated
- 3 - Temporarily Flooded and Saturated
- X - Other Water Bodies

Biscayne Aquifer Production Wells

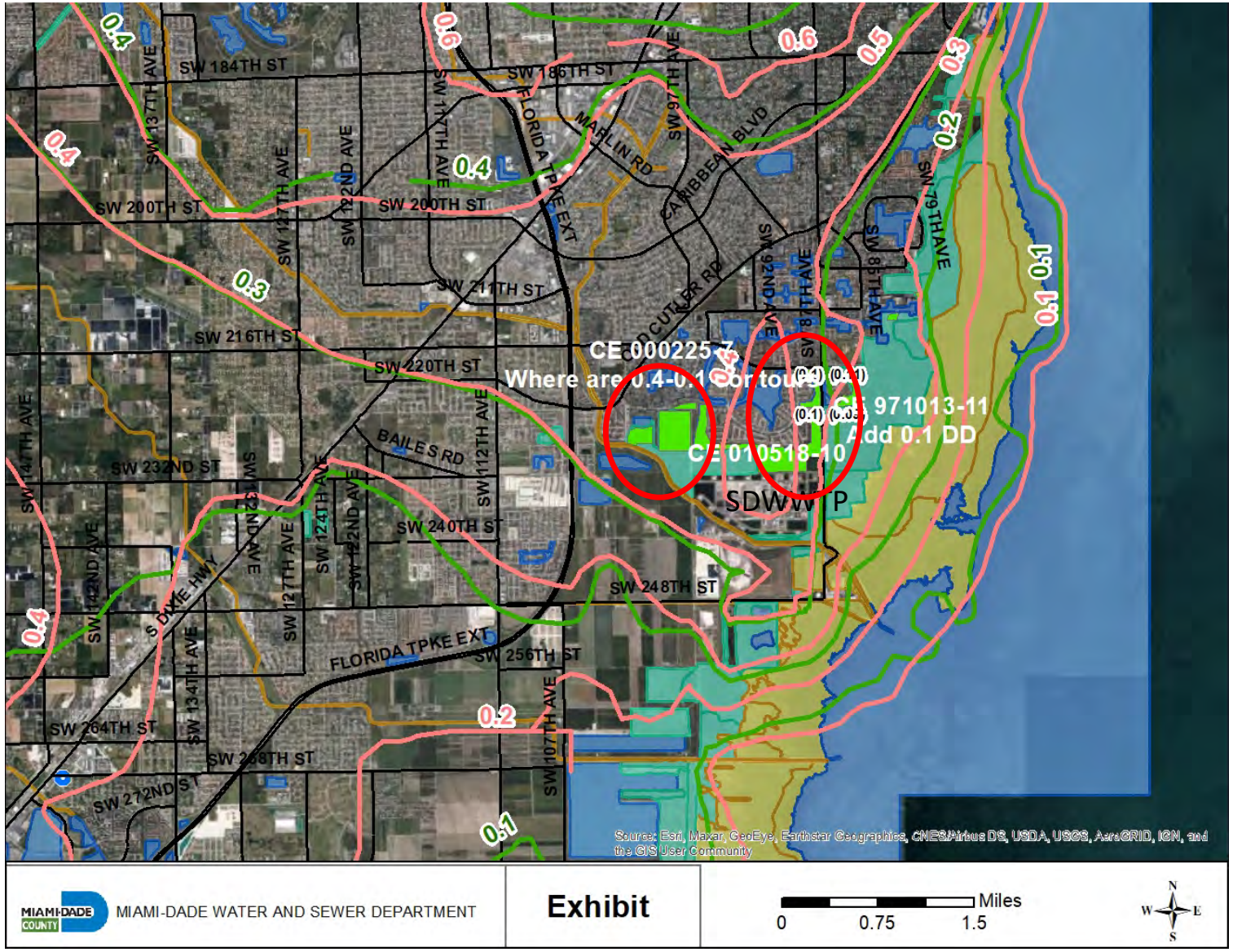
- WASD
- NON WASD

(0.25) - Drawdown Difference ft (Proposed - BASE)

Slide 4
Location: Near University of Miami South
SFWMD question: WL 6 add 0.1 DD

WASD response: The drawdown for this wetland area is lower than 0.12 ft as shown in the map.

Note: ONLY drawdown differences greater than 0.10 ft within area of concern are shown in the map



Legend

- Cumulative Drawdown Alternative (ft)
- Cumulative Drawdown Base (ft)
- Major Roads
- ERP Applications - Conservation Easements

2014-15 Land Cover -- Wetlands for Reg WU Review

- 1 - Permanently Flooded
- 2 - Seasonally Inundated
- 3 - Temporarily Flooded and Saturated
- X - Other Water Bodies

Biscayne Aquifer Production Wells

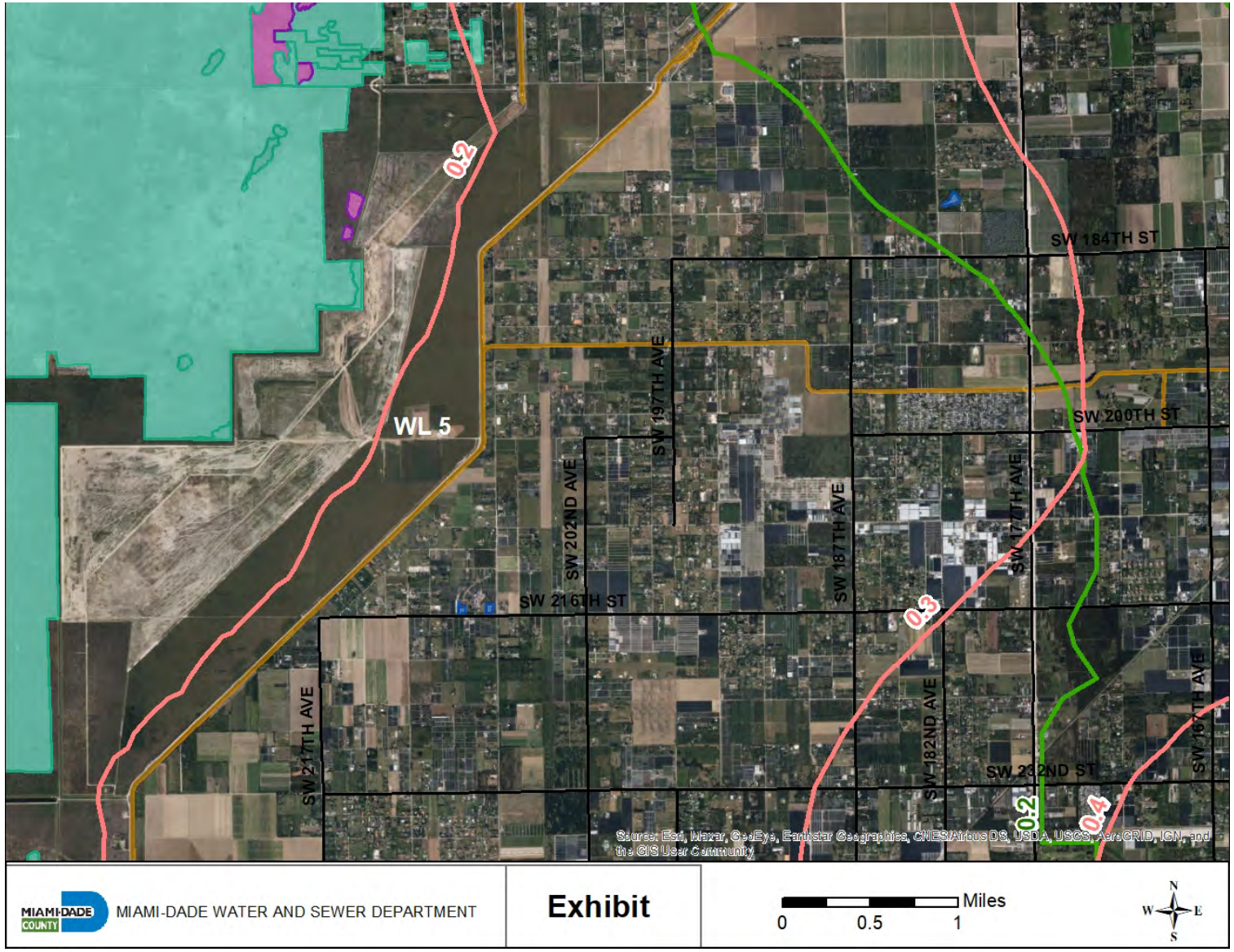
- WASD
- NON WASD

(0.25) - Drawdown Difference ft (Proposed - BASE)

Slide 5
Location: Near SDWWTP
SFWMD question: Where are 0.4-0.1 dd Contour? CE 971013-11 Add 0.1 DD. CE 010518-10

WASD response: The area of concern is between 0.3 and 0.4 ft drawdown contours. Drawdown difference for CE 971013-11 is less than 0.11 ft as shown in the map. Drawdown difference for CE 010518-10 is less than 0.10 ft.

Note: ONLY drawdown differences greater than 0.1 ft within area of concern are shown in the map



Legend

- Cumulative Drawdown Alternative (ft)
- Cumulative Drawdown Base (ft)
- Major Roads
- ERP Applications - Conservation Easements

2014-15 Land Cover -- Wetlands for Reg WU Review

- 1 - Permanently Flooded
- 2 - Seasonally Inundated
- 3 - Temporarily Flooded and Saturated
- X - Other Water Bodies

Biscayne Aquifer Production Wells

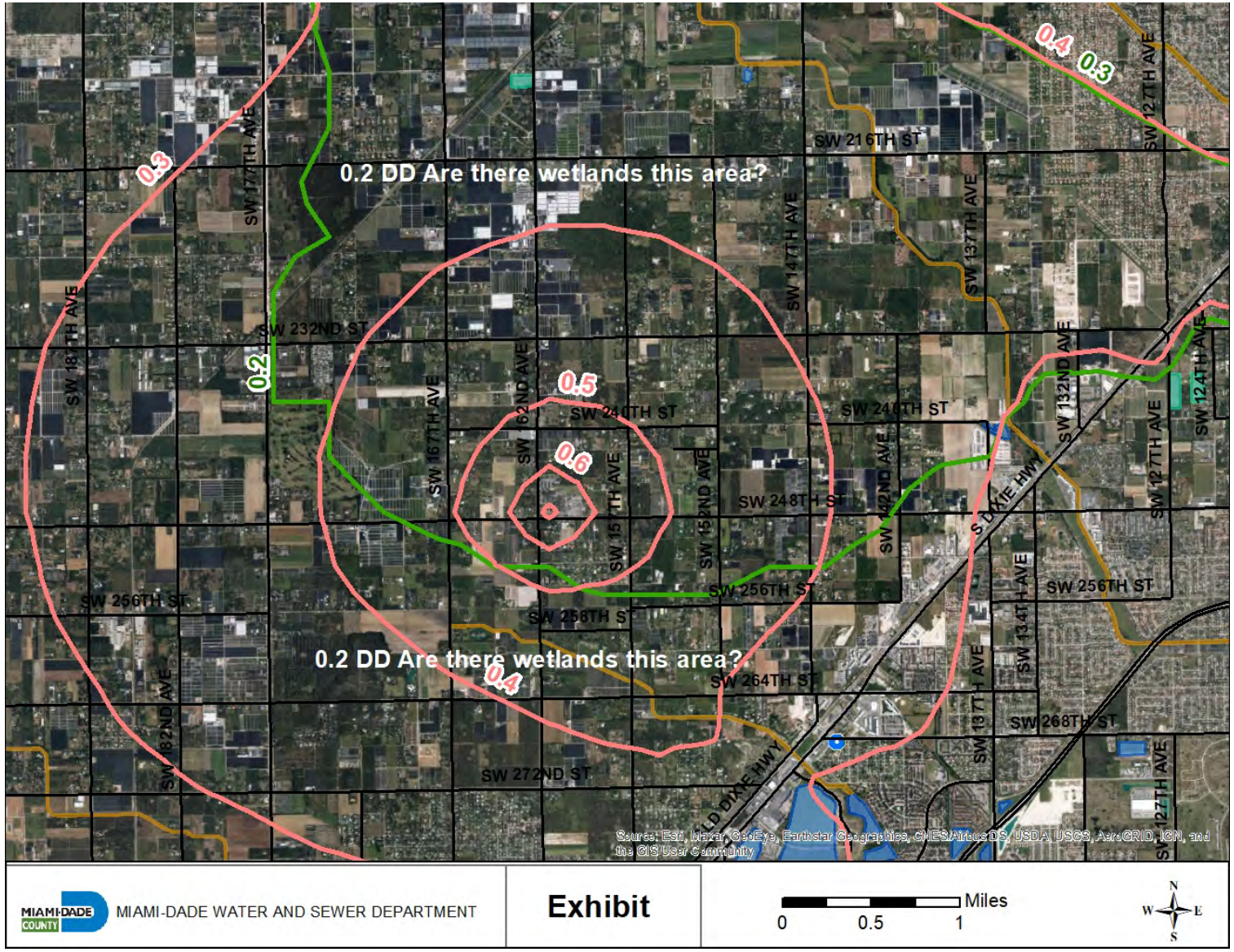
- WASD
- NON WASD

(0.25) - Drawdown Difference ft (Proposed - BASE)

Slide 6
Location: West of L-31N
SFWMD question: WL 5

WASD response: Drawdown difference for WL 5 is less than 0.10 ft so no drawdown difference is shown.

Note: ONLY drawdown differences greater than 0.10 ft within area of concern are shown in the map



Legend

- Cumulative Drawdown Alternative (ft)
- Cumulative Drawdown Base (ft)
- Major Roads
- ERP Applications - Conservation Easements

2014-15 Land Cover -- Wetlands for Reg WU Review

- 1 - Permanently Flooded
- 2 - Seasonally Inundated
- 3 - Temporarily Flooded and Saturated
- X - Other Water Bodies

Biscayne Aquifer Production Wells

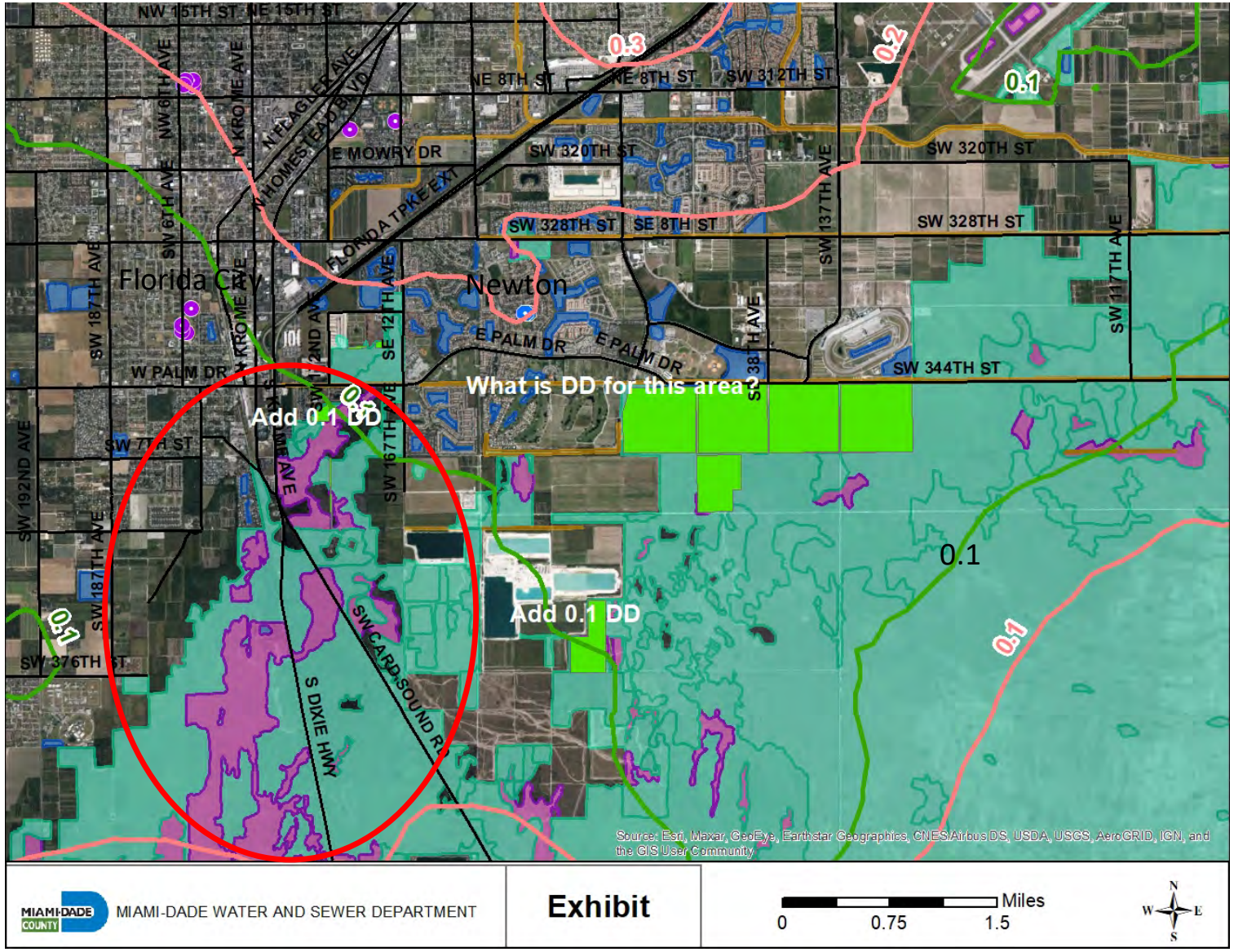
- WASD
- NON WASD

(0.25) - Drawdown Difference ft (Proposed - BASE)

Slide 7
Location: Cluster 10
SFWMD question: Are there wetlands in this area?

WASD response: There are not wetlands in the area. The drawdown is between 0.1 and 0.3 ft.

Note: ONLY drawdown differences greater than 0.1 ft within area of concern are shown in the map



Legend

- Cumulative Drawdown Alternative (ft)
- Cumulative Drawdown Base (ft)
- Major Roads
- ERP Applications - Conservation Easements

2014-15 Land Cover -- Wetlands for Reg WU Review

- 1 - Permanently Flooded
- 2 - Seasonally Inundated
- 3 - Temporarily Flooded and Saturated
- X - Other Water Bodies

Biscayne Aquifer Production Wells

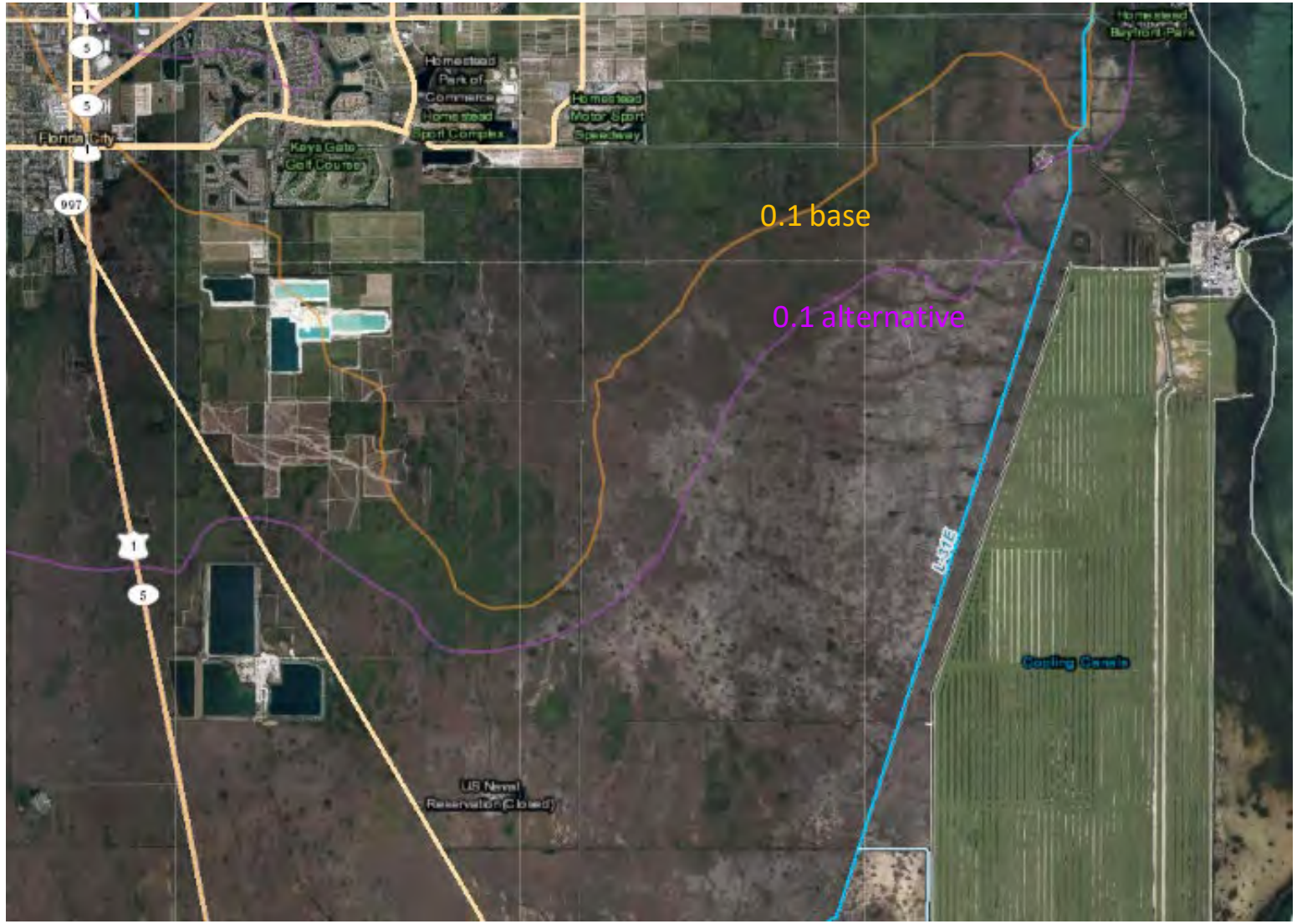
- WASD
- NON WASD

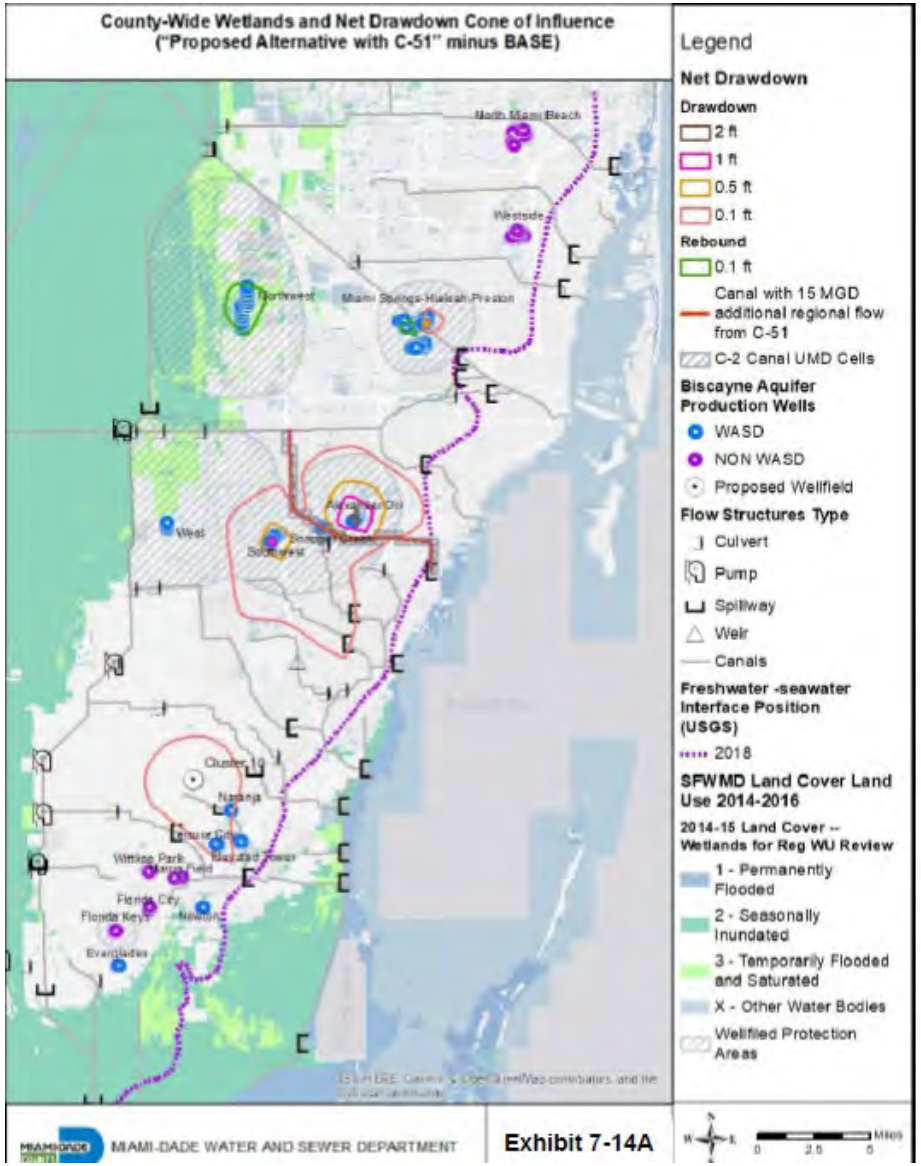
(0.25) - Drawdown Difference ft (Proposed - BASE)

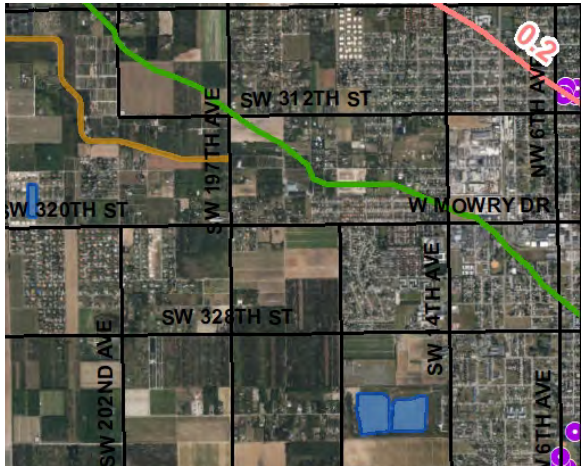
Slide 8
Location: Near Florida Keys Aqueduct Authority and Newton Wellfield
SFWMD question: What is DD for this area? Add 0.1 DD

WASD response: Drawdown difference for these areas of concern is less than 0.10 ft so it is not shown.

Note: ONLY drawdown differences greater than 0.10 ft within area of concern are shown in the map


0.1 base
0.1 alternative
Homestead Park of Commerce
Homestead Sport Complex
Homestead Motor Sport Speedway
Keys Gate Golf Course
Florida City
Homestead Bayfront Park
Cooling Canals
US Naval Reservation (Closed)
997
5
1


County-Wide Wetlands and Net Drawdown Cone of Influence
("Proposed Alternative with C-51" minus BASE)
North Miami Beach
Westside
Northwest
Miami Springs-Hialeah-Preston
West
Southwest
Cluster 1-9
Naranja
Leisure City
Wellfield Protection Areas
Florida City
Florida Keys
Newton
Everglades
Legend
Net Drawdown
Drawdown
2 ft
1 ft
0.5 ft
0.1 ft
Rebound
0.1 ft
Canal with 15 MGD additional regional flow from C-51
C-2 Canal UMD Cells
Biscayne Aquifer Production Wells
WASD
NON WASD
Proposed Wellfield
Flow Structures Type
Culvert
Pump
Spillway
Weir
Canals
Freshwater -seawater Interface Position (USGS)
2018
SFWMD Land Cover Land Use 2014-2016
2014-15 Land Cover -- Wetlands for Reg WU Review
1 - Permanently Flooded
2 - Seasonally Inundated
3 - Temporarily Flooded and Saturated
X - Other Water Bodies
Wellfield Protection Areas
MIAMI-DADE WATER AND SEWER DEPARTMENT
Exhibit 7-14A
Miles



Florida Aqueduct Authority

Legend

- Cumulative Drawdown Alternative (ft)
- Cumulative Drawdown Base (ft)
- Major Roads
- ERP Applications - Conservation Easements

2014-15 Land Cover -- Wetlands for Reg WU Review

- 1 - Permanently Flooded
- 2 - Seasonally Inundated
- 3 - Temporarily Flooded and Saturated
- X - Other Water Bodies

Biscayne Aquifer Production Wells

- WASD
- NON WASD

(0.25) - Drawdown Difference ft (Proposed - BASE)

Slide 9
Location: West of Florida Keys Aqueduct Authority
SFWMD question: WL 1, WL 2, WL 3, WL 4

WASD response: Drawdown difference for these areas of concern is less than 0.10 ft so it is not shown.

Note: ONLY drawdown differences greater than 0.1 ft within area of concern are shown in the map

Proposed Condition: Bird Drive Basin and Tree Island Preserve and Park Hydroperiod Assessment

WUP Modification Application #201117-4

In order to meet the South Florida Water Management District (SFMWD) requirement for wetlands impact evaluation, Miami-Dade Water and Sewer Department (WASD) proposes the following as a Condition in the WUP Modification Application. The purpose of the monitoring stations is to monitor hydroperiods in areas that are currently lacking data in the Bird Drive Basin and the Tree Island Preserve and Park, per discussions with SFWMD and Miami-Dade County Department of Regulatory and Economic Resources (RER). Please refer to Figure 1 for locations.

Note: The Tree Island Preserve and Park are wetlands which contain tree island communities that are also known as "hydric hammocks," and herbaceous short hydroperiod prairie, also known as "marl prairie." The monitoring stations will assist the Miami-Dade County Environmentally Endangered Lands (EEL) Program by allowing for monitoring of the hydrological conditions of the wetlands and to determine if any hydrological improvement projects are needed to restore the wetlands to their highest ecological and hydrological condition.

WASD will design, procure, and oversee construction of two shallow monitoring wells in the Bird Drive Basin, and a monitoring well cluster in the Tree Island Preserve and Park according to the USGS shallow monitoring wells specifications. These wells will be designed, constructed, and instrumented to monitor groundwater levels to assist agencies to evaluate hydroperiods in the Basin and the Park. The location of the MWs will be agreed upon by RER and the SFWMD prior to construction. The construction timeline will depend on the permitting requirements from the different regulatory agencies; therefore, a tentative schedule is provided below.

Proposed Condition

1. The Bird Drive Basin proposed monitoring wells will be 20 feet deep with a 2" PVC casing and 5-foot screen at the bottom of the casing.
2. The Tree Island Park and Preserve proposed monitoring well cluster will consist of a shallow 20 ft deep well, a mid 40 ft well, and a deep 60 ft well, with 2" PVC casings and a 5-foot screen at the bottom of the casings.
3. WASD will design, procure and oversee construction of the MWs. Once the MWs are completed, the USGS under the Joint Funding Agreement 19ESFL000000103 will conduct the following activities:

- Construction of three platforms above maximum expected surface water depth
- Installation of stilling wells for surface water elevation purposes
- Installation of six instrument boxes
    - Three to house the instrument for recording surface water elevation and Real-Time transmission equipment.
    - Three to house the instrument to record ground water elevation and real time transmission equipment.

- Establishment of Elevation Control (NAVD-88 datum) at the three proposed monitoring locations
- The USGS will provide the instruments and real-time transmission equipment.
- Operation and maintenance (O&M) of three stations and availability of real time records (Provisional and Approved) on NWIS-Web.

Figure 2 illustrates an example of the USGS platform design. Please note that there will be 2 (two) boxes at each station, not one as shown in the picture in Figure 2.

The following schedule is proposed for the Condition:

Item	**Milestone Schedule** ***Duration after Permit issuance***
Finalize location and specifications of proposed Hydroperiod Monitoring Stations	3 months
Permits and Procurement process	24 months
Complete construction of groundwater monitoring wells	26 months
Complete construction and instrumentation of USGS Stations	29 months

Figure 1. Proposed Bird Drive Basin and Tree Island Park and Preserve Hydroperiod Monitoring Stations

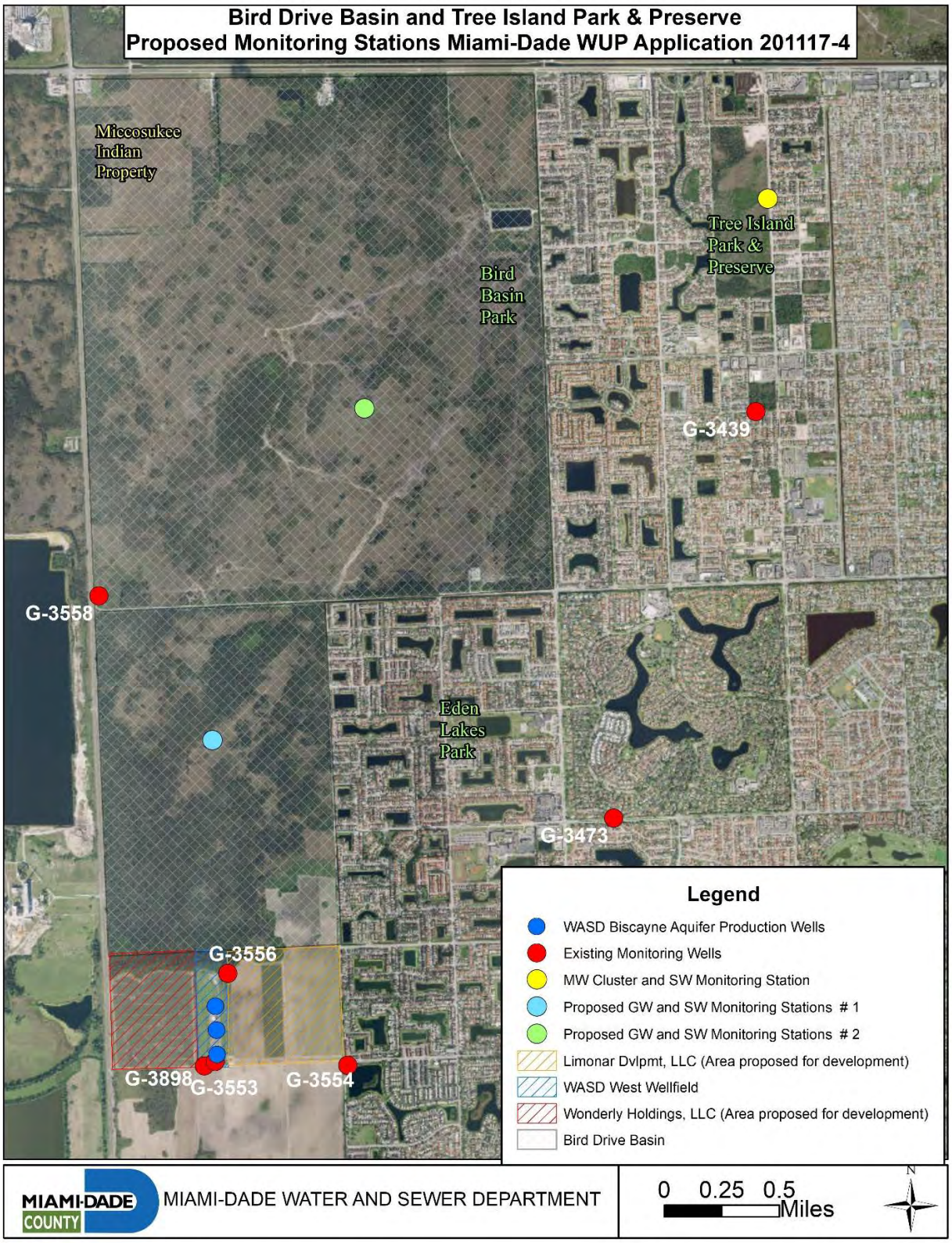


Figure 2. Proposed Station Design

Exhibit 7-17A. County-Wide Contaminated Sites, Flow Vectors, and Net Drawdown Cone of Influence ("Proposed with C-51" minus BASE)

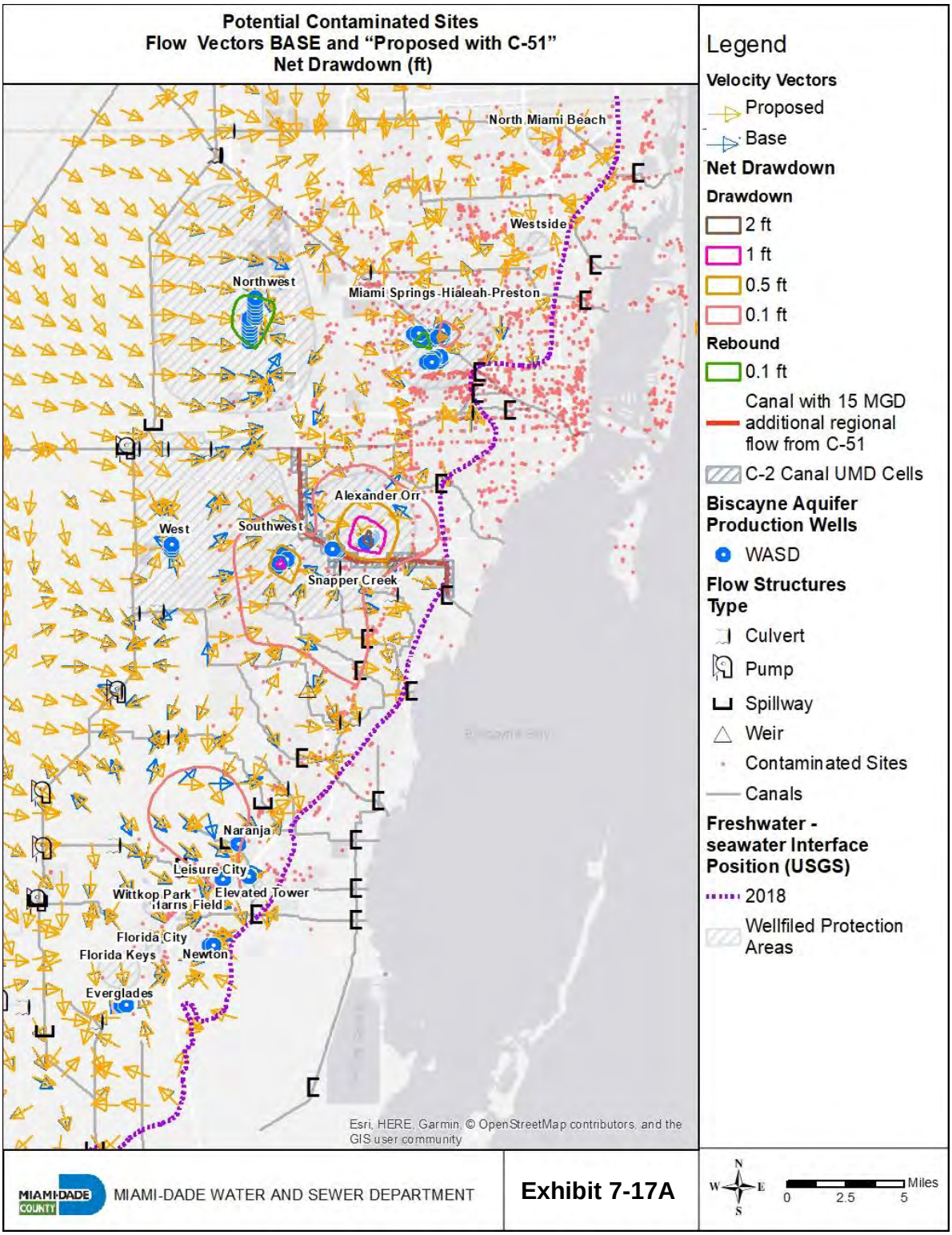


Exhibit 7-17B. Zoom-In of Contaminated Sites, Flow Vectors, and Net Drawdown Cone of Influence ("Proposed Alternative with C-51" minus BASE) for North Area

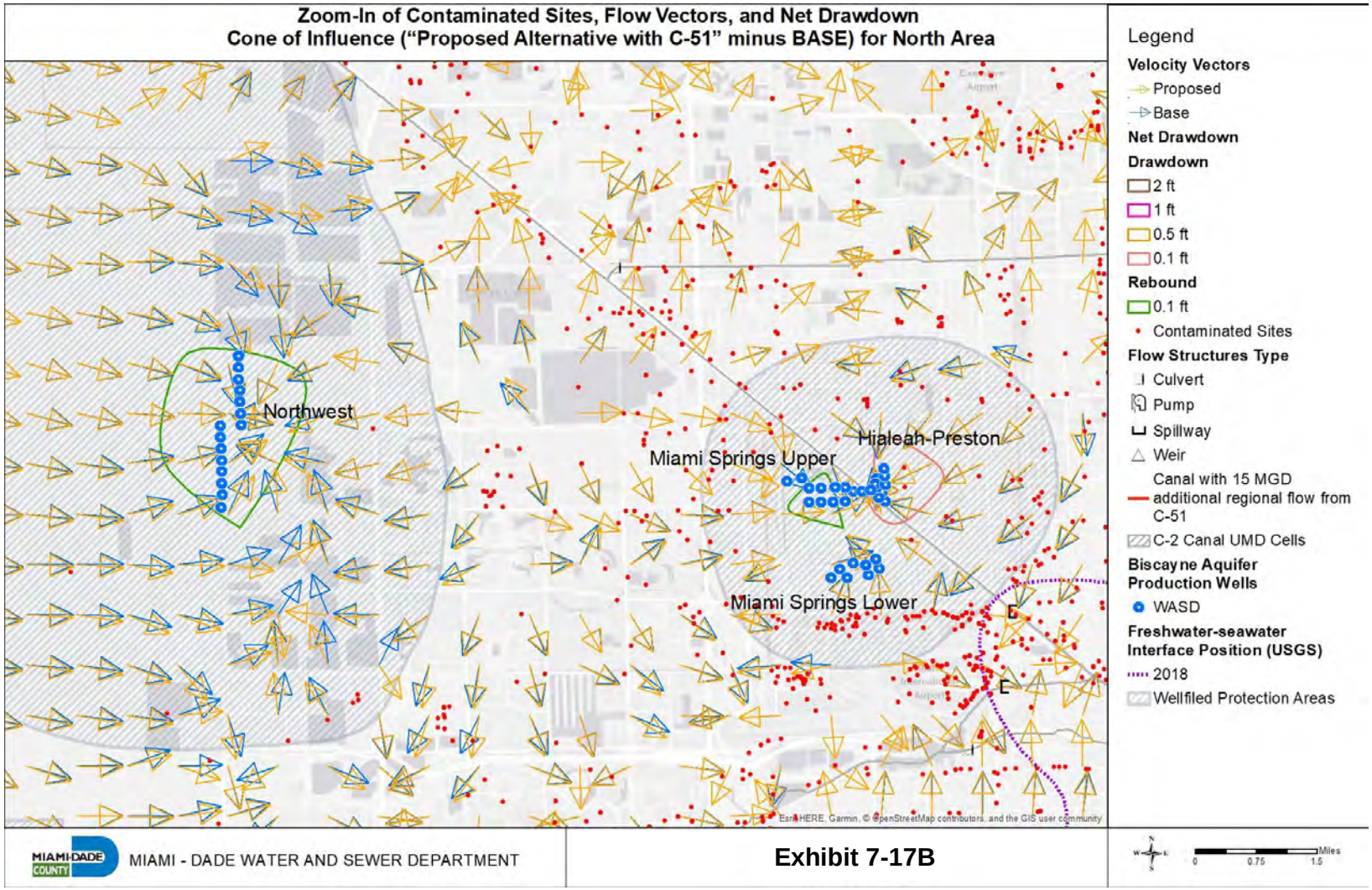


Exhibit 7-17C. Zoom-In of Contaminated Sites, Flow Vectors, and Net Drawdown Cone of Influence ("Proposed Alternative with C-51" minus BASE) for Central Area

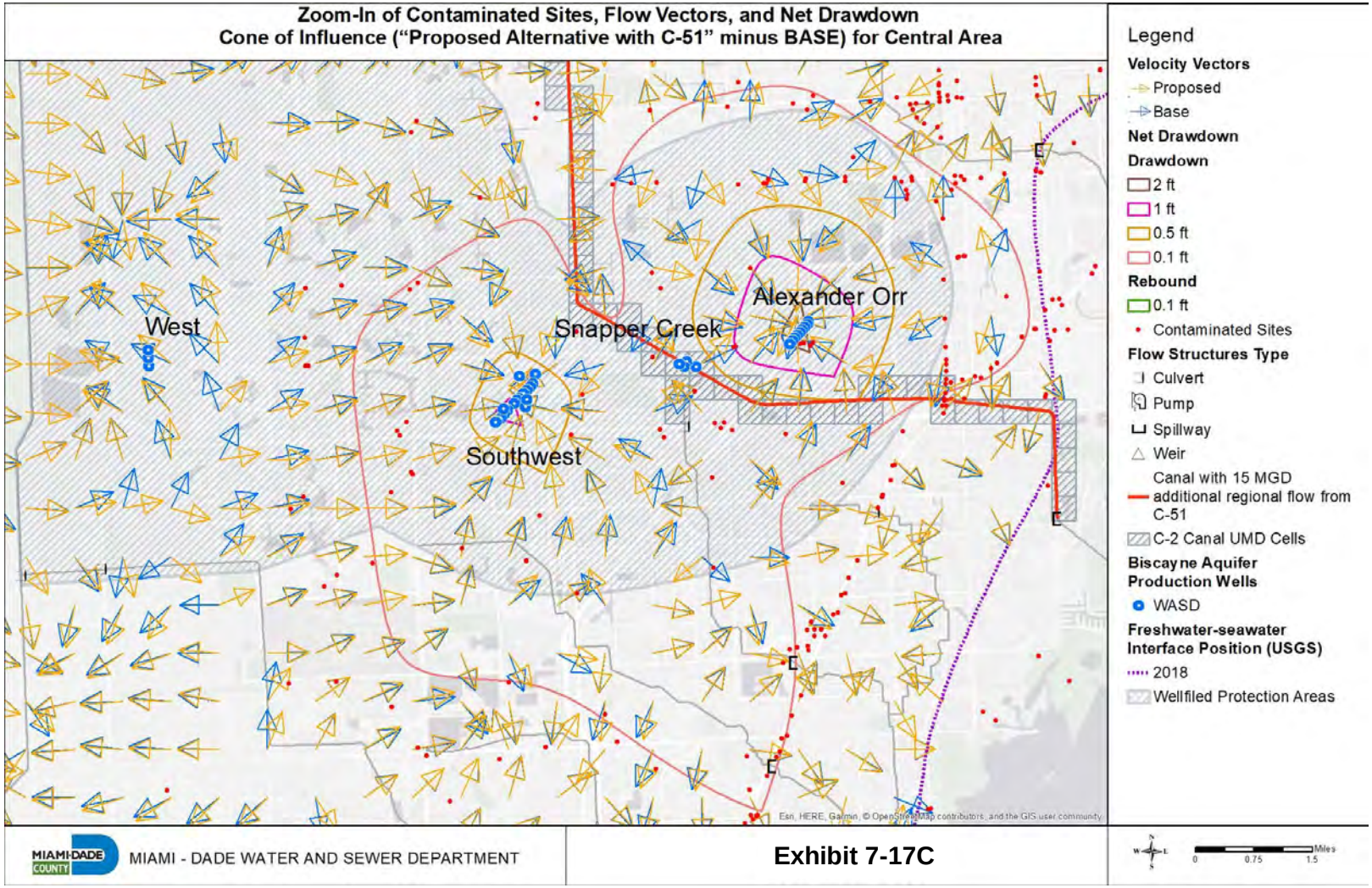
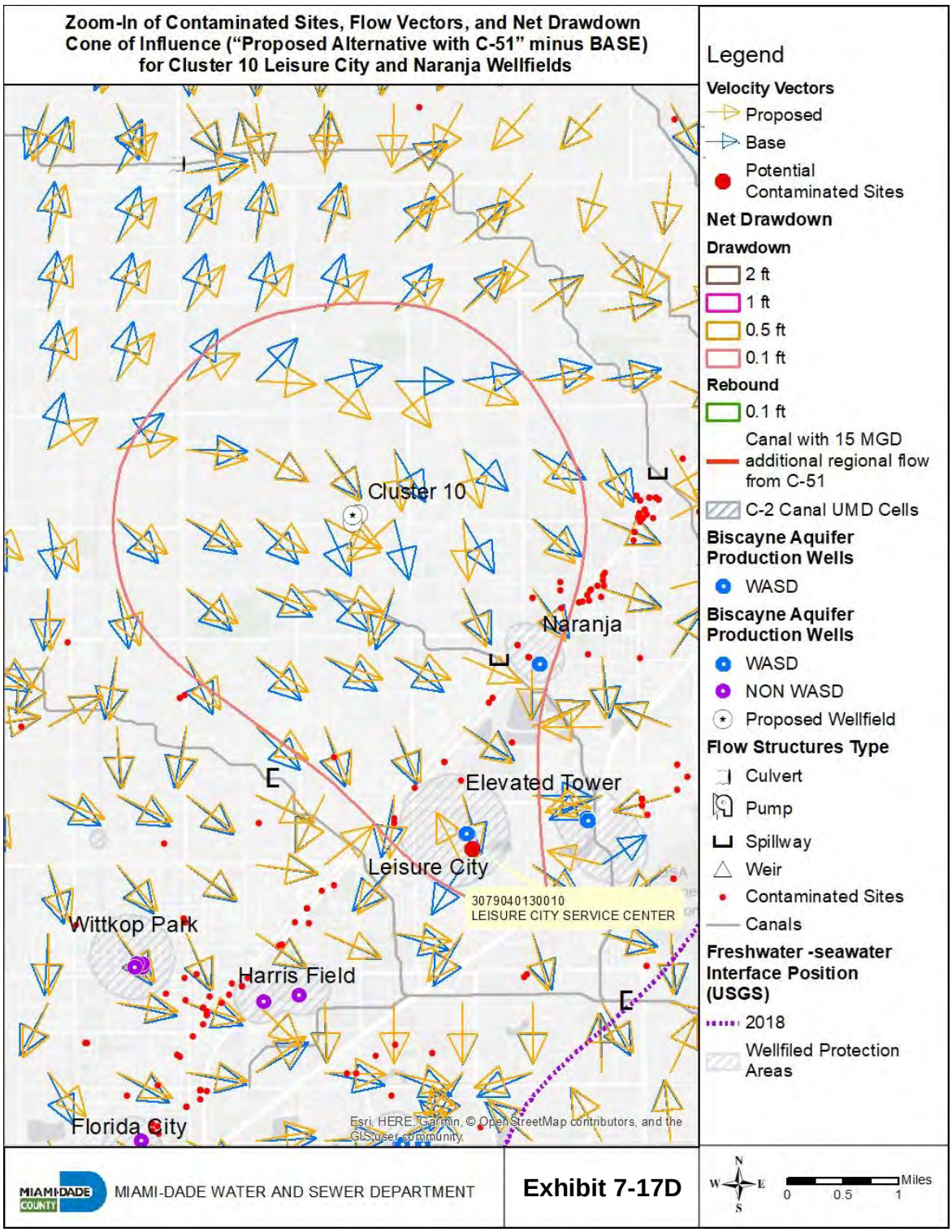


Exhibit 7-17D. Zoom-In of Contaminated Sites, Flow Vectors, and Net Drawdown Cone of Influence ("Proposed Alternative with C-51" minus BASE) for Cluster 10 Leisure City and Naranja Wellfields



Attachment C. Contaminated Sites that are affected by the direction of flow

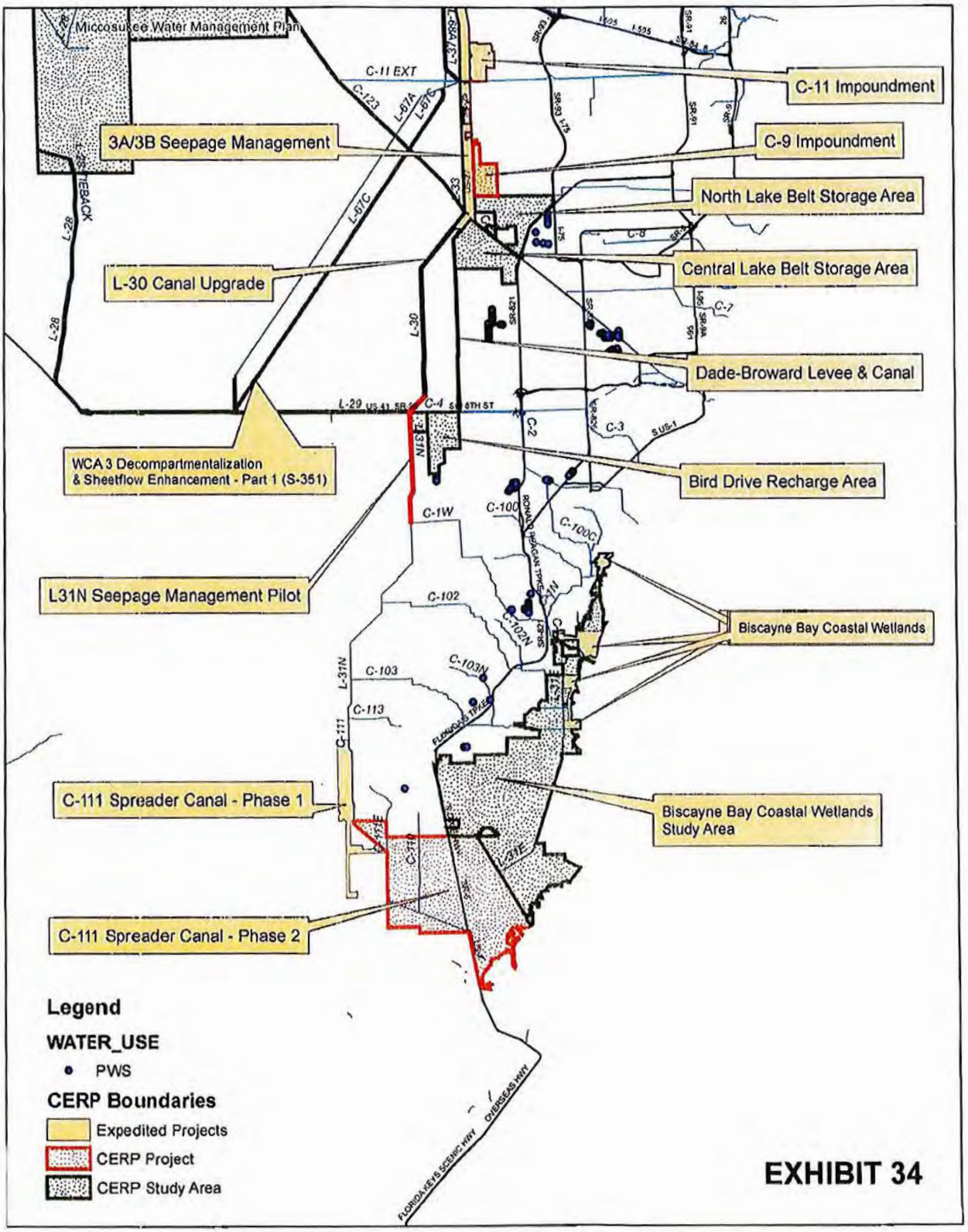
Folio Number*	FDEP ID	Site Name	Classification	Associated Wellfield	Status
3079040130010	13-8505199	LEISURE CITY SERVICE CENTER	CONTAMINATED	Leisure City	Groundwater Monitoring
3040160022840	13-8505614	DIRECT FUEL SPOT LLC	CONTAMINATED	Alexander Orr	Active Gas Station, Groundwater Monitoring
3040220340010	13-8504874	Speedway #6455	CONTAMINATED	Alexander Orr	Active Gas Station, Groundwater Monitoring
3040150000332	13-8504793	3 Chefs and a Chicken	CONTAMINATED	Alexander Orr	Groundwater Monitoring
3040180001201		BIRD ROAD BODY SHOP	CONTAMINATED	Alexander Orr and Snapper Creek	Groundwater Monitoring
3040190090621	13-8503847	Sunshine #108	CONTAMINATED	Alexander Orr and Snapper Creek	Active Gas Station, Groundwater Monitoring
3040210030010	13-8503848	SUNSHINE #30040	CONTAMINATED	Alexander Orr	Active Gas Station, Groundwater Monitoring
3040220070010	13-8504022	SUNSHINE #510	CONTAMINATED	Alexander Orr	Active Gas Station, Groundwater Monitoring
3040170000174	13-9102744	CAMROS	CONTAMINATED	Alexander Orr and Snapper Creek	Active Gas Station, Groundwater Monitoring
3040290020360	8871000	FPL-MILLER SUBSTATION	CLOSED WITH RESTRICTIONS	Alexander Orr and Snapper Creek	Dewatering plan, Groundwater Monitoring
3040210060010		CREST CLEANERS	CONTAMINATED	Alexander Orr	Perchloroethylene Dry Cleaning Facility, Regular Inspections
3040150000450		DCPS-EMERSON ELEMENTARY-TANK#2	CONTAMINATED	Alexander Orr	Sanitary Sewer Collection/transmission System
3040150000180		MOBIL OIL 11943	CLOSED WITH RESTRICTIONS	Alexander Orr	Construction of a New Gas Station, Regular Inspections
3040210040300		JORGE VILLARREAL - P JOVILLA CORP PROP OWNER	CONTAMINATED	Alexander Orr and Snapper Creek	Non-residential Septic Tank

*http://ecmrer.miamidade.gov:8080/hpi/search
https://prodenv.dep.state.fl.us/DepNexus/public/electronic-documents/8505199/facility!search

Table 7.5 (REVISED). Allocations for "Proposed" WUP Modification

Wellfield System (values in MGD)	**BASE**	**Capacity Wells or *Plant***	**Proposed**	
			Dry	Wet
Southwest	109.4	161.2	144.6	140.5
Alexander Orr	40.0	74.4	61.6	61.6
West	15.0	32.4	1.5	6.8
Snapper Creek	21.9	40.0	20.1	19.7
Subtotal Alexander Orr	**186.3**	***214.7***	**227.89**	**228.55**
Northwest	85.4	149.4	68.32	68.32
Miami Springs Lower	13.4	35.7	18.05	17.38
Miami Springs Upper	16.3	43.6	10.63	10.63
John E. Preston	37.2	53.3	40.18	40.18
Hialeah	3.1	12.5	1.14	1.81
Subtotal Hialeah-Preston	**155.4**	***225.0***	**138.32**	**138.32**
Elevated Tank	1.3	*1.4*	1.4	1.4
Leisure City	1.6	*6.5*	4.8	4.8
Naranja	0.1	*1.4*	0.9	0.9
Everglades Labor Camp	2.2	*2.9*	2.9	2.2
Newton	2.6	*2.0*	1.0	1.0
Subtotal South Dade	**7.8**	***14.2***	**11.0**	**10.3**
Cluster 10			**15.0**	**15.0**
Total	**349.5**		**392.20**	**392.20**

CERP Projects



3.4 INTERCONNECTS

The Hialeah-Preston and Alexander Orr, Jr. WTPs are connected via their distribution systems. The major physical barrier separating the Hialeah-Preston and Alexander Orr, Jr. facilities is the Miami River/8th Street Canal. **Table 3-1** lists the interconnects between Hialeah-Preston and Alexander Orr, Jr. distribution systems.

Table 3-1 Hialeah-Preston and Alexander Orr, Jr. Distribution System Interconnects

Location	Interconnect Pipeline Diameter (inches)
NW 1st Pl / NW 1 Ave / SW 2 Ave	48/42
Biscayne Blvd	24
NW 10th Ave and North River Dr / NW 14 Ave	30/24
NW 11th Ave and South River Dr / NW 14 Ave	20/24
NW 27th Ave and South River Dr	20
NW 30th Ave and NW 20th St / Delaware Pkwy	36/30
NW 72nd Ave /Tamiami Blvd	16/24
NW 87th Ave	24/16
NW 107th / 109th /112th Ave	36
NW 107th / 114th Ave	16

The Hialeah-Preston distribution system is interconnected with the Cities of North Miami and North Miami Beach service areas as well. The Alexander Orr, Jr. WTP supplies the southern portion of the Main Regional System. The South Miami-Dade Water System is also located in the southern portion of the Miami-Dade County. Currently, the South Dade subarea is isolated from the Main Regional Water System by the closing of key water system valves. There is generally no intermixing between the two systems, however when required, valving allows the shifting of flows.

3.5 WHOLESALE CUSTOMERS

All 15 wholesale water customers within the WASD's service area have large user agreements. These agreements, except for the City of North Miami Beach, are for a 20-year period. The water agreement with the City of North Miami Beach is for a period of 30-years. In 2007, the City of Miami Springs indicated its desire to pursue the transfer of the Miami Springs water and sewer department to the County. Said transfer was approved by the Miami-Dade County Board of County Commissioners (BCC) on July 17, 2008. **Table 3-2** identifies the 15 wholesale customers and the execution and termination date of their large user contracts.

As outlined in the Miami-Dade County Code of Ordinances, Chapter 2, Article XXXVII, Section 2-347, if a private or municipal water or sewer utility proposes to expand its assigned service area, the Director or designee shall determine whether the Department shall release the portion of the service area requested.

Table 3-2 WASD Wholesale Water Agreements for 20 Year Period

Municipality	Execution and Termination Date
Bal Harbour Village (BLH)	07/26/2007-07/26/2027
Town of Bay Harbour Islands (BHI)	07/26/2007-07/26/2027
City of Hialeah (CH)	07/27/2008 – 07/27/2028
City of Hialeah Gardens (HG)	05/04/2007 – 05/04/2027
City of Homestead (HOMSTD)	07/09/2010 – 07/10/2030, 3 MGD Max.
Indian Creek Village (IC)	07/26/2007 – 07/25/2027
Town of Medley (MED)	05/04/2007 – 05/04/2027
City of Miami Beach (MB)	07/29/2008 – 07/29/2028
City of North Bay Village (NB)	06/14/2007 – 06/14/2027
City of North Miami (NM)	07/26/2007 – 07/26/2027
City of North Miami Beach (NMB)	03/19/2001 – 03/19/2031, as needed basis
City of Opa-Locka (OPLOC)	05/04/2007 – 05/04/2027
Town of Surfside (SURFS)	07/26/2007 – 07/26/2027
Village of Virginia Gardens (VG)	06/14/2007 – 06/14/2027

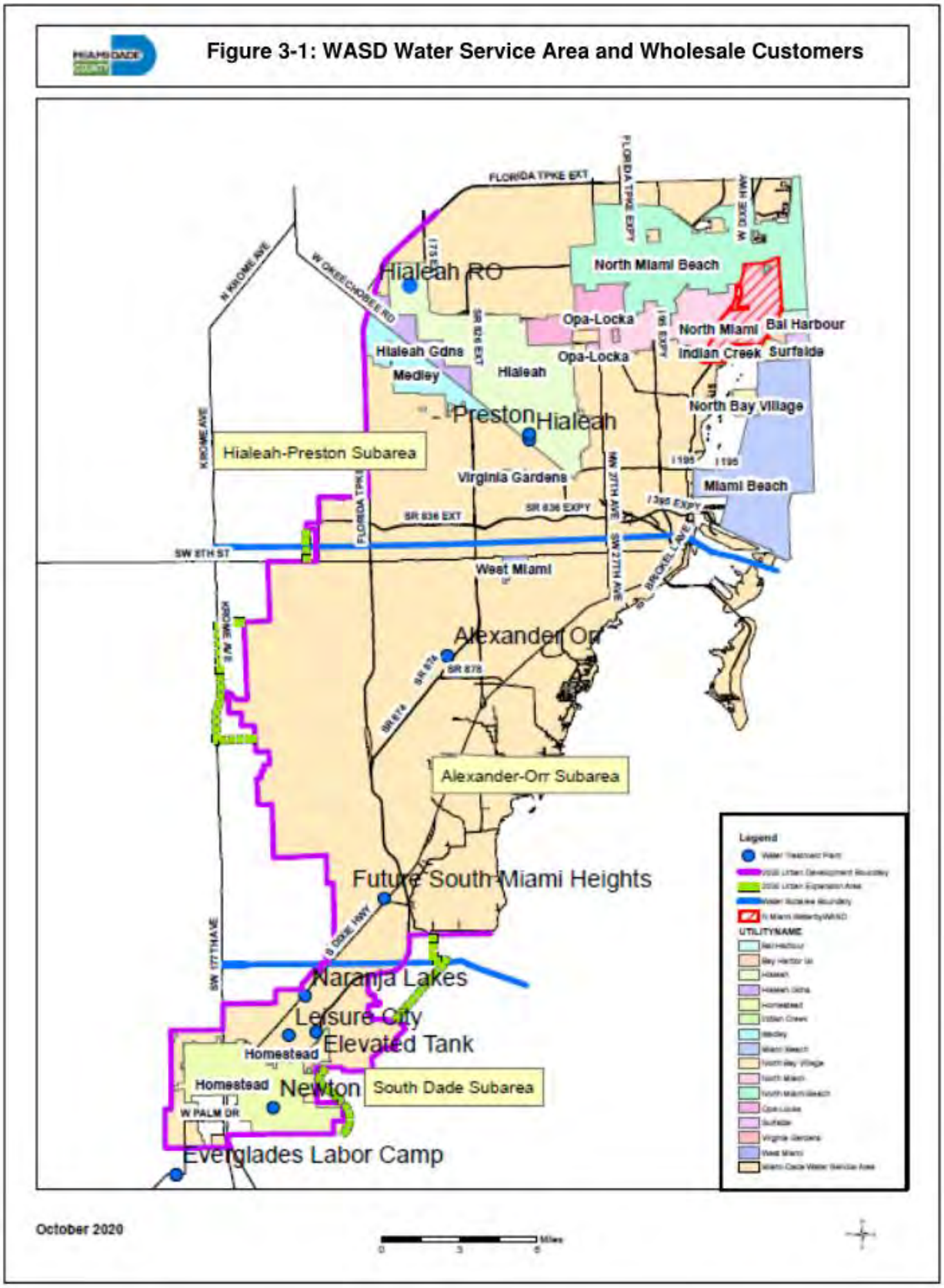
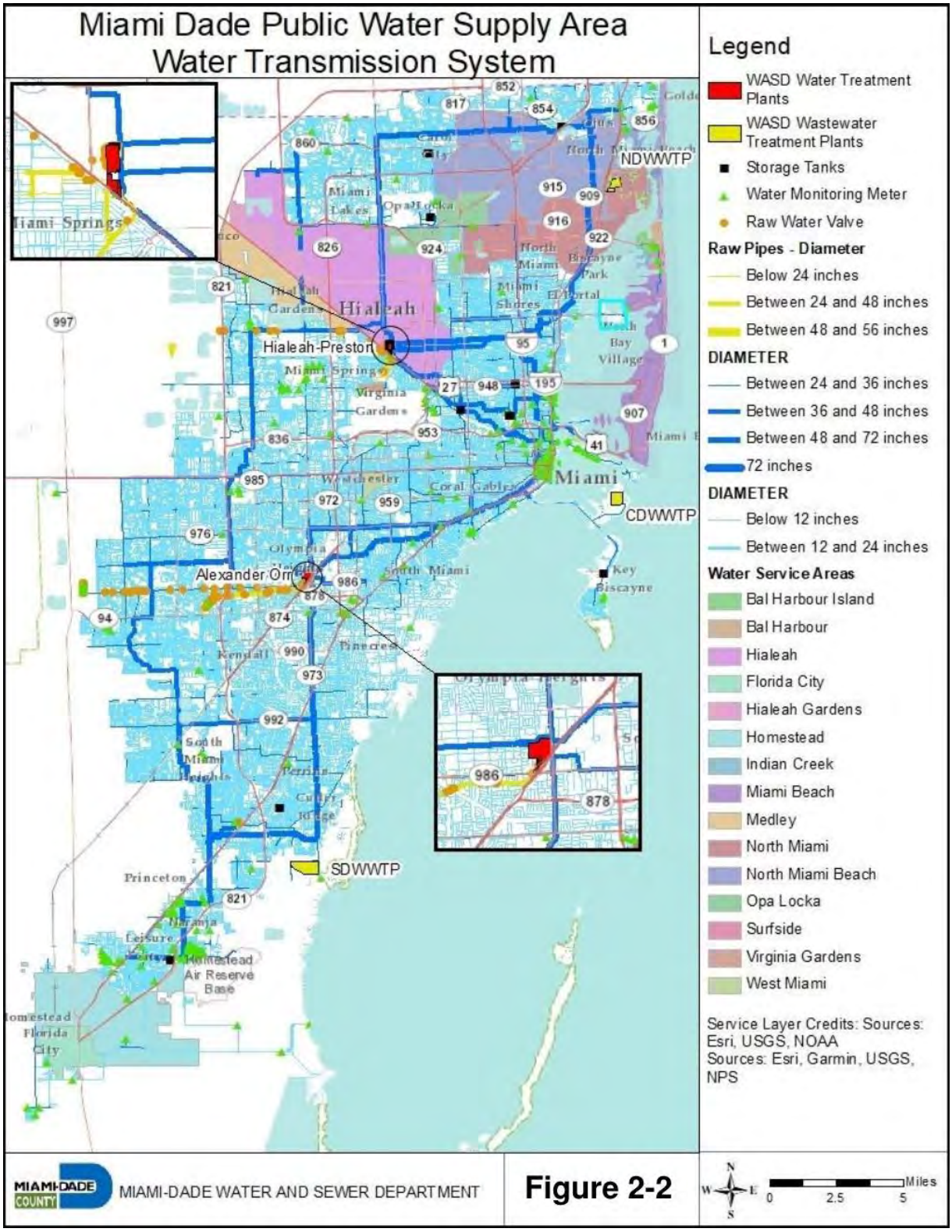


Figure 3-1: WASD Water Service Area and Wholesale Customers
FLORIDA TPKE EXT
FLORIDA TPKE EXPY
W DIXIE HWY
North Miami Beach
Hialeah RO
Opa-Locka
North Miami
Bal Harbour
Hialeah Gdns
Medley
Hialeah
Opa-Locka
Indian Creek
Surfside
North Bay Village
Preston
Hialeah
Hialeah-Preston Subarea
Virginia Gardens
Miami Beach
SR 836 EXT
SR 836 EXPY
I 395 EXPY
SW 8TH ST
West Miami
Alexander Orr
SR 874
SR 878
Alexander-Orr Subarea
Legend
UTILITYNAME
Future South Miami Heights
S DIXIE HWY
SW 177TH AVE
Naranja Lakes
Leisure City
Elevated Tank
Homestead
Homestead
Newton
South Dade Subarea
W PALM DR
Everglades Labor Camp
October 2020
Miles


Miami Dade Public Water Supply Area
Water Transmission System
Legend
WASD Water Treatment Plants
WASD Wastewater Treatment Plants
Storage Tanks
Water Monitoring Meter
Raw Water Valve
Raw Pipes - Diameter
Below 24 inches
Between 24 and 48 inches
Between 48 and 56 inches
DIAMETER
Between 24 and 36 inches
Between 36 and 48 inches
Between 48 and 72 inches
72 inches
DIAMETER
Below 12 inches
Between 12 and 24 inches
Water Service Areas
Bal Harbour Island
Bal Harbour
Hialeah
Florida City
Hialeah Gardens
Homestead
Indian Creek
Miami Beach
Medley
North Miami
North Miami Beach
Opa Locka
Surfside
Virginia Gardens
West Miami
Service Layer Credits: Sources: Esri, USGS, NOAA
Sources: Esri, Garmin, USGS, NPS
NDWWTP
CDWWTP
SDWWTP
Hialeah-Preston
Alexander Orr
Hialeah
Miami
Miami Springs
Miami Lakes
Opa Locka
North Miami
Biscayne Park
Miami Shores
El Portal
Bay Village
Virginia Gardens
Westchester
Coral Gables
Olympia Heights
South Miami
Key Biscayne
Kendall
Pinecrest
South Miami Heights
Perrine
Cutler Ridge
Princeton
Naranja
Leisure City
Homestead Air Reserve Base
Homestead
Florida City
Miles
0
2.5
5
MIAMI-DADE COUNTY
MIAMI-DADE WATER AND SEWER DEPARTMENT
Figure 2-2

3.4 INTERCONNECTS

The Hialeah-Preston and Alexander Orr, Jr. WTPs are connected via their distribution systems. The major physical barrier separating the Hialeah-Preston and Alexander Orr, Jr. facilities is the Miami River/8th Street Canal. **Table 3-1** lists the interconnects between Hialeah-Preston and Alexander Orr, Jr. distribution systems.

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As outlined in the Miami-Dade County Code of Ordinances, Chapter 2, Article XXXVII, Section 2-347, if a private or municipal water or sewer utility proposes to expand its assigned service area, the Director or designee shall determine whether the Department shall release the portion of the service area requested.

6.4.1 Hialeah-Preston Water Treatment Plants (WTPs)

The Hialeah and John E. Preston WTPs are located at 200 W. 2nd Avenue and 1100 W. 2nd Avenue, respectively. The adjacent facilities in Hialeah share interconnected source water and finished water storage capacity. These two plants serve the Hialeah-Preston subarea, generally the service area that lies north of Flagler Street. The two plants have similar treatment processes, which are described separately below.

6.4.1.1 Hialeah Water Treatment Plant

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. There are plans to rerate and upgrade the Hialeah WTP to a capacity of 70 MGD, if necessary.

The source water for Hialeah WTP is from the Hialeah-Miami Springs Wellfields, supplemented by the Northwest Wellfield. The Hialeah WTP has a current rated capacity of 60 MGD. The treatment process 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.

6.4.1.2 John E. Preston Water Treatment Plant

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, the 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 like 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 cited in a residential area of Hialeah.

6.4.1.3 Hialeah Reverse Osmosis (RO) Water Treatment Plant

On December 27, 2007, the Miami-Dade County and the City of Hialeah entered into a Joint Participation Agreement (JPA) to design, construct, and operate a water treatment plant. The JPA specified that the County and the City would be equal partners in funding the project.

The Hialeah RO WTP was released for operation by the Florida Department of Health in November 2013. The Plant is located at 4250 W. 114th Terrace in the City of Hialeah and is approved to operate at a capacity of 7.5 MGD. An additional capacity of 2.5 MGD is scheduled to be completed by June 30, 2021. The main source of water for the Hialeah RO WTP is the Floridan Aquifer. The Hialeah RO plant is currently in operation serving 50% of its water capacity to the City of Hialeah and 50% to unincorporated areas within the WASD's service area.

6.4.2 Alexander Orr, Jr. Water Treatment Plant

The Alexander Orr, Jr. WTP is located at 6800 S.W. 87th Avenue in Miami. The original design capacity was 40 MGD in 1954. This plant has undergone several expansions during the past 50 years. The raw water pumping capacity was increased by 32 MGD to 262 MGD in 1995 with an additional source from the West Wellfield. Additional reservoir and high-pressure service capacities were also added to bring the total plant design capacity to 256 MGD. The plant rated capacity is 214.74 MGD.

The Alexander Orr, Jr. WTP receives its source water from the Alexander Orr, Jr. Wellfield, Snapper Creek Wellfield, Southwest Wellfield, and the West Wellfield. The Alexander Orr, Jr. WTP treatment process is similar to the other two major plants utilizing lime softening with activated sodium silicate added prior to lime as a coagulant aid, recarbonation, fluoridation, chlorination, ammoniation, and filtration. Unlike the Hialeah and Preston WTPs, this plant does not utilize enhanced softening or air stripping towers. The Alexander Orr, Jr. WTP can also receive groundwater from five Upper Floridan Aquifer wells located in the West Wellfield and the Southwest Wellfield. Finished water is distributed to a service area generally delineated as south of Flagler Street.

6.4.3 South Dade Water Treatment Plants

In 1985, WASD purchased an existing private utility known as the Rex Utility District Water System. Today, this system is referred to as the South Dade Water System. At the time of purchase, the system consisted of six plants and associated wellfields. Since the time of purchase, the Redavo WTP has been taken out of service.

The South Dade Water System is currently made up of five small WTPs that draw groundwater from the 12 wells located at the plant sites. The five small plants serving the South Dade Service Area include Elevated Tank, Everglades Labor Camp, Leisure City, Naranja, and Newton WTPs. These plants are located in the Southern portion of the County as shown on Figure 3-2. The plants utilize in-line disinfection with free chlorine and stabilization with the addition of polyphosphate. The 2019 annual average daily flow (ADF) for the plants was 7.00 MGD. This system serves a population of approximately 43,207 in the Leisure City, Everglades Labor Camp, and Naranja areas excluding the cities of Homestead and Florida City, which provide their own water service. These small treatment plant capacities are limited by the pumping capabilities at each plant.

6.4.4 Finished Water Storage

6.4.4.1 Hialeah Preston Subarea

The finished water storage facilities for the Hialeah-Preston subarea consist of both "in-plant" and remote storage facilities. The storage facilities are summarized in **Table 6-12**.

Table 6-12 Hialeah-Preston/Hialeah R.O. Finished Water Storage Facilities

Location	Description	Capacity (MG)
Hialeah WTP	Reservoir – Ground Storage	3.0
Hialeah WTP	Clearwell	1.7
John E. Preston WTP	Ground Storage Tank No. 1	9.0
John E. Preston WTP	Ground Storage Tank No. 2	14.0
John E. Preston WTP	Clearwell	1.1
N.W. 20th Street	Ground Storage Tank	7.5
N.W. 36th Street	Ground Storage Tank	5.0
N.W. 67th Street	Ground Storage Tank	8.2
N.W. 30th Street	Ground Storage Tank	2.5
Carol City	Ground Storage Tank	2.0
Hialeah R.O. WTP	Ground Storage Tank	10.0
Total Storage		**64.0**

Source: WASD Water Facilities Master Plan, 2003 and WASD

6.4.4.2 Alexander Orr, Jr. Subarea

The water storage facilities of the Alexander Orr, Jr. subarea consist of a 59-MG ground storage tank located and a 1.6-MG plant clear well located at the WTP, and a 5-MG ground storage tank at South Miami Heights for a total of 65.6-MG storage.

6.4.4.3 South Dade subarea

The South Dade subarea has storage at individual water treatment plants for disinfection purposes. Additionally, WASD currently has a five (5) MG finished water reservoir and high service pumping facility in operation at its South Miami Heights site (since 2013). This storage tank is used to augment Alexander Orr Jr. WTP storage of finished water for high-demand periods. The various interconnections at several locations between the South Miami-Dade Water System and the Alexander Orr subarea, ensures adequate storage and reliability of service to the South Miami-Dade Water System.

6.5 WATER DISTRIBUTION FACILITIES

The WASD water distribution system is currently supplied by three regional treatment plants, five (5) smaller treatment plants located in the southern portion of Miami-Dade County, and the Hialeah RO WTP. The distribution systems serving these treatment plants are comprised of loops and are interconnected, as shown on **Figure 6-35**.

6.5.1 Hialeah-Preston Subarea

Finished water from the Hialeah and John E. Preston WTPs is pumped through a system of dedicated low-pressure pipelines to remote storage tanks and pumping facilities. This system provides water service to the southeastern part of the Hialeah- Preston subarea. The low-pressure system initiates at the Hialeah WTP with a 42-inch diameter main heading due east along N.W. 62nd Street, and 36-inch and 42-inch diameter mains running southeast along Okeechobee Road then parallel to the Miami River. The main on N.W. 62nd Street connects to the N.W. 67th Street pumping station, which pumps the water to the south through a 30-inch diameter main running along N.W. 10th Ave. The 30-inch diameter main continues south and connects into the N.W. 36th Street pumping station. This main continues further south and connects into the golf ground pump station.

The 36-inch and 42-inch diameter mains combine into a 54-inch diameter main at N.W. 42nd Avenue. They split again into a 36-inch and a 42-inch diameter main at N.W. 32nd Avenue. These mains connect to the 30th Avenue pump station. The 30th Avenue pump station feeds two 36-inch diameter mains that connect to the 20th Street pumping station to complete the loop. The pipe loop is made predominantly of concrete and cast-iron pipes that were installed in the early 1930's. Some segments of this loop having been in service for more than 60 years. Replacement of these pipes are scheduled as needed in the WASD maintenance program. The remaining part of this subarea is served by a high-pressure system. Water is pumped into the system by five high service in-plant pumps with a total capacity of

34.1 MGD at 167 feet total dynamic head (TDH). The high-pressure system delivers water service to Hialeah, Miami Springs, and a high-pressure main connected to the City of Miami. The northern section of the subarea is supplied by one major piping loop. The loop begins at the plant with a 72-inch diameter main heading north along West 2nd Avenue, next it turns west at West 20th Street, and then it turns North along West 4th Avenue to NW 191st Street. At this location, it turns east until it reaches N.E. 18th Avenue. It then turns south and connects into a 54-inch diameter main that connects to the N.W. 67th Street pumping station. The southwestern portion of the subarea is supplied by a 36-inch diameter main that connects to the 54-inch diameter main heading out of the John E. Preston WTP at West 25th Street. The main heads west on N.W. 74th Street then turns south on N.W. 107th Avenue. It eventually interconnects with the Alexander Orr, Jr. subarea piping network on S.W. 56th Street around S.W. 117th Avenue.

6.5.1.1 City of Hialeah

Water Treatment Plant is comprised of an interconnected network of mains ranging from 8-inches to 36-inches in diameter, mostly of ductile iron pipe and C-900 PVC.

6.5.2 Alexander Orr, Jr. Subarea

The distribution system of the Alexander Orr, Jr. subarea is comprised of two major piping loops. The first major loop traverses the south and west portion of the subarea. The loop starts at the WTP with a 60-inch diameter main heading west on S.W. 64th Street and a 48-inch diameter main that runs south along S.W. 87th Avenue (Galloway Road) until S.W. 216th Street. The 48-inch diameter main then heads west along S.W. 216th Street to a tee connection at S.W. 127th Avenue. One branch of the tee runs north on S.W. 127th Avenue to S.W. 184th Street and then turns west to 137th Avenue. The 48-inch diameter main travels north on 137th Avenue to S.W. 152nd Street, where it connects into a 24-inch diameter main running east-west on 152nd Street and a 36-inch diameter main that continues north on 137th Avenue to S.W. 120th Street. There, the 36-inch diameter main turns west, then runs north along Hammocks Boulevard to S.W. 88th Street where it reduces to a 24-inch diameter main that runs north along S.W. 152nd Avenue to 72nd Street. The 24-inch diameter main then runs east-west on S.W. 72nd Street. At S.W. 147th Avenue, it connects with a 36- inch diameter main that runs north to S.W. 56th Street (Miller Road), where it connects with a 42-inch diameter main that runs east on Miller Road. This 42-inch diameter main enlarges to a 48-inch diameter main that eventually connects to the 60-inch diameter main at the intersection of Miller Road and S.W. 117th Avenue to complete the loop. A 36-inch diameter main branches off the 60-inch diameter main at the intersection of Miller Road and S.W. 117th Avenue. This 36-inch diameter main heads north along S.W. 117th Avenue and eventually interconnects the Alexander Orr, Jr. and the Hialeah-Preston subareas.

The second loop starts at the WTP with two 48-inch diameter mains. One main runs north on S.W. 87th Avenue (Galloway Avenue) to S.W. 40th Street (Bird Road) and then turns east. The main continues east along Bird Road, reduces to a 42-inch diameter main at N.W. 57th Avenue, then connects through a 30-inch diameter pipe connection with the second 48-inch diameter main at Bird Road and S.W. 37th Avenue (Douglas Road). The second 48-inch diameter main travels along Highway 874 to S.W. 56th Street, where it turns east then northeast between S.W. 67th Avenue and S.W. 62ndAvenue to S.W. 48th Street. The main runs east on S.W. 48th Street then northeast through several changes in direction, where it connects to the other 48-inch diameter main at Bird Road and S.W. 37th Avenue. The main then travels north along South Dixie Highway and eventually interconnects with the Hialeah-Preston Service Area piping network through a 36-inch diameter pipe that runs along S.W. 2nd Avenue.

6.5.3 South Dade Subarea

The South Dade water distribution system consists of small water mains with diameters ranging from 16 inches to 4 inches. The distribution system is centered around each individual WTP. Each has its own sets of water main loops within the distinct service areas. The Leisure City, Elevated Tank, and Naranja WTPs, however, are so well interconnected that they can be generally considered as one distribution area. More than 63 percent of the South Dade subarea is served by these three plants. The distribution system of these three plants form one major loop that is bounded on the north by S.W. 248th Street, on the south by S.W. 304th Street, on the east by S.W. 117th Avenue, and on the west by S.W. 172nd Avenue.

The Everglades Labor Camp WTP serves a small area that is bounded on the north by S.W. 376th Street, on the south by S.W. 384th Street, on the east by S.W. 192nd Avenue, and on the west by S.W.

194th Path. This distribution system consists of one 12-inch- diameter loop around the service area interconnected with several 8-inch diameter distribution mains. The Everglades Labor Camp and the Newton WTP distribution system are interconnected via an 8-inch diameter main that runs east along S.W. 376th Street then heads north on S.W. 187th Avenue, where it connects with a 12-inch diameter main at S.W. 360th Street. The 8-inch diameter main continues north on S.W. 187th Avenue until S.W. 352nd Street, where it connects into a small distribution loop that terminates with a 16-inch diameter stub-out.

The Newton WTP distribution system consists of a single 12-inch diameter water main that runs east and west on S.W. 336th Street. The eastbound main then branches north and south along S.W. 152nd Avenue. The southbound branch then turns east on S.W. 344th Street and ultimately connects to the FP&L Turkey Point generating plant. The northbound branch continues along S.W. 152nd Avenue, where it connects to the Leisure City WTP distribution system at S.W. 304th Street. A 6-inch diameter main running south from SW 288th Street on S.W. 137th Avenue then east on S.W. 328th Street connects to an 8-inch diameter main that runs south on 117th Street. This 8-inch diameter main connects to the 12-inch diameter main to FP&L Turkey Point generating plant. This main ultimately completes the interconnection of the Newton WTP with the Leisure City, Elevated Tank, and Naranja WTPs' distribution areas.

The westbound branch of the 12-inch diameter main turns south on S.W. 162nd Avenue then heads south and west on Palm Drive. The main then continues south on S.W. 167th Avenue then west on S.W. 360th Street until it connects to the Everglades Labor Camp WTP 8-inch diameter main that runs north on SW 187th Avenue. The South Dade distribution system is interconnected with the Alexander Orr distribution system in the vicinity of SW 127th Avenue.

6.5.3.1 City of Hialeah

The City of Hialeah provides water service to portions of Northwest Miami-Dade County within its municipal boundaries. The City produces potable water via the Hialeah Reverse Osmosis (RO) Water Treatment Plant. The Floridan Aquifer allocation for this wellfield in allocated on the WASD WUP Permit 13-00017-W. On December 27, 2007, the Miami-Dade County and the City of Hialeah entered into a Joint Participation Agreement (JPA) to design, construct, and operate the Hialeah RO Water Treatment Plant. The JPA specified that the County and the City would be equal partners in funding the project. The facility-initiated operation in November of 2013.

The water treatment facility has a current production capacity of 7.5 MGD, allocated equally to the City of Hialeah and Maim-Dade County (3.25 MGD each). The portion of the City of Hialeah served by the Hialeah RO water treatment plant consists of approximately 1,900 acres and is located between NW 170th Street on the north, NW 138th Street on the South, I-75 on the east, and NW 107th Avenue on the west.

Miami Dade County Water Conservation Plan
November 2020

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BACKGROUND

Miami Dade Water & Sewer Department (WASD) has the responsibility on behalf of Miami Dade County (County) to prepare a County water conservation plan (Plan) in fulfillment of South Florida Water Management District's (SFWMD) water use permit (WUP) requirements. This Plan is created as part of the County's 2020 WUP modification application. The County has selected the Standard Water Conservation Plan per SFWMD's "Applicant's Handbook for Water Use Permit Applications" (Handbook) effective September 7, 2015 to fulfill the water conservation requirement of the WUP. The Standard Water Conservation Plan requires the applicant to "implement each of five elements as necessary to achieve efficient use to the extent economically, environmentally and technically feasible." Applicant is required to explain how its proposed plan will effectively promote water conservation.

ELEMENTS

The following are a list of sub-elements under each of the five elements. Items chosen by WASD to fulfill are indicated as selected/not selected.

ELEMENT 1

Water conservation public education program. Program shall consist of one or more sub-elements:

1. Water conservation public service announcements (not selected)
2. Water conservation speakers, posters, literature, videos, and/or other information provided to schools and community organizations (selected)
3. Public water conservation exhibits (not selected)
4. Water conservation articles and/or reports provided to local news media (selected)
5. A water audit customer assistance program to address indoor and outdoor water use (not selected)
6. Water conservation information provided to customers regarding year-round landscape irrigation conservation measures (selected)
7. Water conservation information posted on the supplier's website (selected)
8. The construction, maintenance, and publication of water efficient landscape demonstration projects (not selected)
9. Water conservation information provided in customer bills or separate mailings (selected)
10. Other means of communication proposed by the applicant (selected)

ELEMENT 2

Outdoor water use conservation program. Program shall consist of one or more sub-elements:

1. The adoption of an ordinance or condition of service limiting lawn and landscape irrigation that is provided to the District and is either no less stringent than or consistent with the irrigation restrictions adopted by the District (selected)

2. The adoption of an ordinance or condition of service requiring the use of Florida-Friendly landscaping principles, Florida Water Star, or other generally accepted water conservation programs, guidelines, or criteria that address outdoor water conservation (selected)
3. The adoption of an ordinance or condition of service consistent with Section 373.62, F.S., relating to automatic landscape irrigation systems (selected)
4. The provision of a landscape irrigation audit program for businesses and residents, including the provision of information to assist customers in implementing the recommendations of the audit. The applicant shall provide a description of the program including implementation details and the content of the audits to be provided (selected)
5. An education element focusing on outdoor conservation as part of the water conservation public education program required by Subsection 2.3.2.F.1.a.i. (selected)
6. Any other conservation measures or programs proposed by the applicant designed to reduce outdoor water use (not selected)

ELEMENT 3

The selection of a rate structure designed to promote the efficient use of water by providing economic incentives. The rate structure may include, but not limited to, increasing block rates, seasonal rates, quantity-based surcharges, and/or time of day pricing as a means of reducing demands. The District shall afford the utility wide latitude in adopting a rate structure in accordance with section 373.227(3), F.S.

ELEMENT 4

A water loss reduction program, if water losses exceed 10% as calculated pursuant to Subsection 2.3.2.F.2.

ELEMENT 5

An indoor water conservation program. The applicant will consider indoor conservation sub-elements such as those listed below. Implementation of these sub-elements may be achieved through collaboration with other entities, including the SFWMD. For each indoor conservation sub-element included in the applicant's program, the applicant shall provide the frequency, duration, and implementation schedule for the element.

1. Plumbing retrofit rebates;
2. Faucet aerator and showerhead giveaways;
3. An education element focusing on indoor conservation as part of the water conservation public education program required by Subsection 2.3.2.F.1.a.i; and,
4. Other indoor conservation measures proposed by the applicant.

FULLFILLMENT OF SUB-ELEMENTS

The following are efforts undertaken to fulfill the selected sub-elements under each Element:

ELEMENT 1: Sub-element 2

The County has developed a robust public education program that promotes and educates residents on the importance of water conservation. During 2017, 2018 and 2019 WASD participated in 60, 45 and 44 outreach tabling events and presentations respectively, at elementary schools, high schools, universities, municipal governments, senior centers and community workshops. Presentations conveyed information on the region's water resources and the importance of conserving water, both indoor and outdoor, as well as information on the County's high efficiency fixture and landscape irrigation evaluation rebate incentive programs available to residents. Appendix A provides an example of a presentation used. Tabling events offer residents information on the County's rebates, water conservation tips and educational material. Appendix B provides a list of events participated in 2017.

To promote its indoor and outdoor water conservation rebates, WASD has created cards to distribute at outreach events and at WASD's walk-in customer service centers. The County created these cards for the following programs:

- High efficiency fixture rebates including toilets, faucets and showerheads
- Senior high efficiency toilet rebates
- Industrial, commercial and institutional (ICI) toilet rebates
- Landscape irrigation rebates

Example of the cards are provided in Appendix C.

As part of its educational effort, the Miami Dade Board of County Commissioners (BCC) adopted Resolution 89-09 2009. To fulfill the intent of the resolution, the annual Every Drop Counts Children's Poster Contest was developed. The contest encourages kindergarten through fifth grade students to convey a water conservation them in a poster drawing. Thirteen winners are selected, one from each County commission district and winners are recognized at a BCC meeting, receiving prizes for their efforts. All students that submit a poster receive a free t-shirt to incentivize participation. Table 1 shows the number of students participating between 2017 – 2020.

TABLE 1. STUDENT PARTICIPATION EVERY DROP COUNTS POSTER CONTEST.

2017	2018	2019	2020
2,540	4,302	1,228	4,566

See Appendix D for an example of an entry form and Appendix E for a student t-shirt design.

As part of the resolution, WASD also distributes water conservation education and coloring books to kindergarten, elementary and middle school students at outreach events and school presentations. These books provide information on the importance of water, how it's used in everyday life, why it's important to conserve and quizzes on water facts. Refer to Appendix F for examples.

ELEMENT 1: Sub-element 4

WASD creates and distributes news releases about water conservation to the County mayor's office which is than disseminated to local news outlets. See Appendix G for a list of water conservation themed news releases in 2017.

ELEMENT 1: Sub-element 6

View the County' irrigation rule website at http://www.miamidade.gov/waterconservation/water-restrictions.asp. The high efficiency rebate card in Appendix C also provides the days and time allowed to irrigate. This information was included in a news release and as part of promoting "July is Smart irrigation Month" at https://www.miamidade.gov/global/news-item.page?Mduid_news=news1530626930824839.

ELEMENT 1: Sub-element 7

WASD created a water conservation website http://www.miamidade.gov/waterconservation/. The website provides information on indoor and outdoor water conservation to residents of the County. It also provides information on outreach and education for children including the popular annual Every Drop Counts Children's Poster Contest. The website is kept current to convey information on high efficiency rebates and other water conservation topics. Included is the showerhead exchange program allowing residents to exchange up to two of their old water wasting showerheads to receive two free high efficiency ones. Exchanges are conducted at customer service centers and at outreach events. Information on water conservation kits is also provided that includes a high efficiency showerhead, dye tablets and a low flow kitchen faucet. These are distributed to residents that have concerns about high water bills. Learn more at http://www.miamidade.gov/water/showerhead-exchange.asp.

ELEMENT 1: Sub-element 9

As part of its effort to inform residents on the County rebate programs, WASD mails rebate cards (email and US post) to customers using data from the billing database. For example, during 2017, 30,316 commercial accounts were contacted about the ICI rebate: 10,201 by email, 20,115 by US mail. That same year 46,144 customers with a sprinkler account were informed about the landscape irrigation rebate program: 5,779 by email, 40,365 via US mail. In addition, email blasts about the County's rebate programs were sent to over 277,000 customers in 2018 and 2019 as well. Examples of the rebate cards are provided in Appendix C.

ELEMENT 1: Sub-element 10

WASD conducts advertising campaigns during the year promoting water conservation. These include:

- Fix a Leak Week *in partnership with EPA WaterSense* – educating residents on the importance of fixing leaks to conserve water and promote WASD's leak detection website http://www.miamidade.gov/water/leak-detection.asp.
- Build a Better Bathroom – since the bathroom is the largest user of water indoors, this campaign promotes the County's high efficiency fixture rebates at http://www.miamidade.gov/waterconservation/single-multi-family-rebates.asp. This effort encourages water use reduction while saving money by upgrading bathroom fixtures to high efficiency models.
- Water Wisely – landscape irrigation uses a significant amount of water. To reduce water use and conserve the resource, WASD developed a landscape irrigation rebate program for properties located within the County that have an existing in-ground automatic irrigation system. The County provides a free assessment of the irrigation system and provides recommendations how to increase water efficiency. The cost to implement the recommendations are eligible for rebates and the goal of the advertising campaign is to inform residents about the rebate program and educate them on properly irrigating their yards by following simple landscape rules to reduce water waste. Info at http://www.miamidade.gov/waterconservation/landscape-evaluations.asp.

ELEMENT 2: Sub-element 1

The County has adopted a permanent two day/week landscape irrigation ordinance allowing watering on Thursday/Sunday for even addresses and Wednesday/Saturday for odd addresses. The ordinance is located under Chapter 32 – Water and Sewer Regulation, Article 1, Section 32.8-2 of the County code. WASD provides this information to residents on its website at http://www.miamidade.gov/waterconservation/water-restrictions.asp.

ELEMENT 2: Sub-element 2

A landscape ordinance was adopted to provide minimum standards for both incorporated and unincorporated areas of the County. The ordinance establishes minimum landscape standards that enhance and improve the quality of landscape and include promoting Florida Friendly Landscaping (FFL), preserving and promoting existing tree canopy and other methods to improve the environment and aesthetic appearances of the community. In May 2009, the BCC amended landscape regulations to incorporate FFL principles. The landscape code is provided under Chapter 18A and 18B. Information is available at http://www.miamidade.gov/zoning/code-landscape.asp.

ELEMENT 2: Sub-element 3

Chapter 18A – Miami Dade County Landscape Ordinance requires irrigation systems to be designed, operated and maintained using rain switches or other devices, such as soil moisture sensors, used with automatic controls. Visit http://www.miamidade.gov/zoning/code-landscape.asp to view the code.

ELEMENT 2: Sub-element 4

As part of its water conservation efforts, the County developed a landscape irrigation rebate program to reduce outdoor water use. On average, landscape irrigation can consume over 50% of a property's total water usage (both indoor and outdoor) therefore, reducing that use is critical to conserving water. The County provides free evaluations to both single family homes and large properties (residential and commercial) that have an existing in-ground automatic irrigation system. Recommendations are provided that will increase efficiency and reduce water use. If the recommendations are implemented, the property owner can qualify for rebates. Appendix H displays the single family and large property evaluation application forms. Table 2 lists the number of landscape rebates issued in calendar years 2017, 2018 and 2019:

TABLE 2. LANDSCAPE IRRIGATION REBATES.

Year	LP	SFH
2017	37	84
2018	38	95
2019	27	113

For more information on the landscape irrigation rebate program, visit: http://www.miamidade.gov/waterconservation/landscape-evaluations.asp.

ELEMENT 2; Sub-element 5

Under Element 1, Appendix A conveys information on the County's landscape irrigation rebate program that promotes outdoor water conservation via efficient landscape irrigation. It discusses the importance of outdoor conservation, the landscape program, eligible retrofits and rebates for single family and large properties. Included is information on the Florida Yards & Neighborhood Program (FYN) which provides education on the nine FFL principles throughout the County and is funded by WASD. The program promotes FFL yard certification, the County's landscape irrigation and rain barrel programs and education and outreach. In addition, FYN staff conduct water conservation education at a variety of venues including schools, hospitals, HOA groups and community events. More information is available at http://sfyl.ifas.ufl.edu/miami-dade/landscapes--gardening/florida-yards-and-neighborhoods-fyn/.

ELEMENT 3

The County has implemented an inclining rate structure to encourage year-round conservation with unit price increases based on water consumed. Inclining rates encourage conservation since the more water used the higher water rates are. Appendix I shows the monthly rates for water service effective

as of October 1, 2020. Rates, fee and charges for all category of uses are available at https://www.miamidade.gov/water/rates.asp.

ELEMENT 4

WASD's leak detection program has been in place since the 1990's and is tasked with detecting, locating and repairing leaks throughout WASD's utility service area. The program consists of 18 full time employees with an annual operating budget of approx. $700,000. WASD commits substantial resources to track and repair system leaks and the program is continually researching and implementing new technologies for efficiency and effectiveness. When the program first started, it took approximately 5 years to survey the utility service area. With efficiency improvements, it's now completed in less than one year. Equipment used to detect leaks include fixed network systems, listening devices and sound recorders. Table 3 lists number/type of leaks discovered during fiscal year 2019:

TABLE 3. FY2019 LEAKS.

Main	Service	Valve	Water
334	309	82	725

Repairing these leaks resulted in the recovery of over 7 billion gallons of water in that year.

ELEMENT 5

1. Plumbing retrofit rebates. Element 1 describes the County's indoor water conservation program targeting residential and commercial properties constructed prior to 1996. The Program consists of retrofit rebates for the purchase and installation of high efficiency fixtures including toilets, faucets and showerheads to replace water wasting fixtures common in older properties. Table 4 provides the name, description, fixture type, rebate amount, eligibility requirements and implementation schedule for each program:

TABLE 4. INDOOR WATER CONSERVATION PROGRAM ELEMENTS/IMPLEMENTATION SCHEDULE.

PROGRAM	NAME	DESCRIPTION	FIXTURE	AMOUNT	REQUIREMENTS	FREQUENCY/DURATION
Indoor Water Conservation Program	High Efficiency Fixture Plumbing Retrofit Rebate Program	Single and Multi-Family properties	Toilet/Faucet/ Showerhead	$50/$25/$25 respectively	1) MDC resident 2) Ppty constructed < 1996 3) Max 2 rebates per fixture per ppty	Ongoing/Annually
"	Senior High Efficiency Toilet Retrofit	Single and Multi-Family properties	Purchase/ install toilet	Purchase: Up to $100 first	1) MDC resident 2) senior exemption ppty taxes 3) main residence 4) ppty constructed <	Ongoing/Annually

	Rebate Program			$75 second <u>Install:</u> Up to $100 first Up to $125 for two	1996 5) Max 2 rebates per ppty	
"	Industrial, Commercial, Inst. Plumbing Retrofit Rebate Program	Commercial properties	Toilet/Urinal/ Faucet/ Showerhead	$50/$50/$25/ $25	1) Ppty constructed < 1996 2) Max 50 rebates/yr per fixture per ppty	Ongoing/Annually
"	Showerhead Exchange Program	Single and Multi-Family properties	Showerhead/ aerator	FREE	1) MDC resident 2) Ppty constructed < 1996 3) Max 2 each per ppty/unit	Ongoing/Annually
"	Lodging High Efficiency Fixture Plumbing Retrofit Rebate Program	Lodging properties (motels, hotels)	Toilet/Faucet/ Showerhead	$50/$25/$25	1) Ppty constructed < 1996 2) Max 50 rebates/yr per fixture per ppty	Ongoing/Annually
"	Showerhead Exchange Program	Lodging properties (motels, hotels)	Showerhead/ aerators	FREE	1) Ppty constructed < 1996 2) Max 50 showerheads per ppty	Ongoing/Annually
Outdoor Water Conservation Program	Landscape Irrigation Rebate Program	Single Family & Large Property evaluations	Irrigation retrofits including parts & labor irrigation systems	SFH-up to $500/year for five years LP-up to $2,850/ppty	Functioning In-ground automatic landscape irrigation systems	Ongoing/Annually
Water Conservation Public Education Outreach Campaign	Water Conservation Outreach & Education	Conduct tabling events and presentation on regional water issues and water conservation	N/A	N/A		Ongoing/Annually
Water Conservation Advertising Campaign	> Fix a Leak Week >Build a Better Bathroom	Advertising campaigns to educate public on County water conservation programs	N/A	N/A		Ongoing/Annually

	>Smart Irrigation					
News Media	News Releases	News releases providing information on the County's water conservation program	N/A	N/A		Ongoing/Annually
Mailings	Mass mailing rebate cards – US Postal Service/email	Mail/email rebate cards to targeted audiences	N/A	N/A		Annually

2. WASD distributes aerators and high efficiency showerheads to customers that request them free of charge. Customer are required to bring in their old showerheads in exchange for up to two free high efficiency showerheads. Also available are water conservation kits which includes a high efficiency showerhead, dye tablets and a low flow kitchen faucet. Showerheads, aerators and water conservation kits are available at outreach events and customer service centers. WASD promotes giveaways through its FREE single family, multi-family and lodging showerhead exchange programs. Information is available at http://www.miamidade.gov/water/showerhead-exchange.asp.

3. As described in Element 1, participates in outreach events including presentations at elementary schools, high schools, universities, municipal governments, senior centers and workshops that provide information on the region's water resources and the importance of conserving water, both indoors and outdoors. Included is information on the County's indoor high efficiency fixture rebate incentive program available to County residents. Refer to Appendix A for an example of a presentation used, specifically slide #'s 4, 5 and 6 that discuss the indoor high efficiency fixture rebate program. As part of the presentation, it's stressed that the largest user of water in a home is the bathroom since it contains a toilet, faucet and shower. Therefore, the most effective water saving strategy in a home is to install high efficiency fixtures. WASD also participates at events providing information on the County's rebates, water saving habits and water conservation educational material to attendees. Table 5 shows the number of events participated in years 2016 to 2019:

TABLE 5. OUTREACH EVENTS ATTENDED 2016 – 2019.

2016	2017	2018	2019
31	60	45	44

As part of its effort to educate customers on water conservation, WASD has created cards providing information on the County's water conservation rebate program to residents highlighting program requirements and benefits. The cards are also available at WASD's customer service centers. The following are rebate cards created for distribution to residents:

- High efficiency fixture rebates including toilets, faucets and showerheads
- Senior high efficiency toilet rebates
- Industrial, commercial and institutional (ICI) toilet rebates

Example of the rebate cards are provided in Appendix C. WASD also educates residents on indoor conservation through an extensive advertising campaign. There are three efforts conducted during the year, Fix a Leak Week in March, Build a Better Bathroom in August and Smart Irrigation in July. Campaigns use a variety of media to reach a wide audience including social media (i.e. YouTube, Snapchat, Instagram, Twitter), online banners, radio, transit and print (i.e. newspapers, magazines). Refer to Appendix J for information on each campaign budget.

4. Other indoor conservation measures include the adoption of a Water-Use Efficiency Standards Manual in 2009 (https://www.miamidade.gov/waterconservation/library/instructions/water-use-efficiency-standards-manual.pdf) that amended Chapters 8 and 32 of the County code establishing revised standards for water saving fixtures and appliances in new residential and commercial construction. Installation of submeters are also required in multi-unit complexes tracking water use in individual dwelling units. In addition, recommendations for industrial, commercial and institutional water use efficiency requirements and outdoor water use for residential, non-residential properties and rights of ways are provided.

Appendix A:

Water conservation presentation

miami-dade water

MIAMI-DADE WATER AND SEWER DEPARTMENT

QUALITY. VALUE. ECONOMIC GROWTH.

Water Use Efficiency Plan

- April 2006
  - *Five Year Plan* approved by the BCC
- March 2007
  - expanded to 20-years as part of the SFWMD Water Use Permit (WUP)
- Plan includes:
  - Water Conservation Initiatives
  - Water Loss Reduction Program
  - Legislative Initiatives
  - Public Outreach
- Requirement of the WUP

MIAMI-DADE WATER AND SEWER DEPARTMENT

QUALITY. VALUE. ECONOMIC GROWTH.

Water Use Efficiency Section

Resolution R-468-06 approved Miami-Dade Water Use Efficiency Five-Year Plan, including a Water Conservation Coordinator/Manager

Assistant Director – Planning & Regulatory Compliance

Fiscal Year 2016-2017
Table of Organization

MIAMI-DADE WATER AND SEWER DEPARTMENT

QUALITY VALUE ECONOMIC GROWTH

MDC Water Conservation Incentives-*RESIDENTIAL*

- **Residential High Efficiency Fixture Rebates**
  - Toilets/Faucets/Showerheads
  - Built before 1996
  - WaterSense-certified toilets
  - Faucets/showerheads cannot exceed 1.5 gpm
  - Up to $50/$25/$25
- **Senior High Efficiency High Efficiency (HET) Toilet Rebates**
  - Built before 1996
  - WaterSense-certified toilets
  - Up to $200 for one toilet/$300 for two
- **Multi-family Fixture Rebates**
  - Toilets/Faucets/Showerheads
  - Built before 1996
  - WaterSense-certified toilets
  - Up to $50/fixture
  - Max 50 rebates/year
- **FREE Showerhead Retrofit Exchange**
  - Residents – max 2 per property
  - Multi-family – unlimited

MIAMI-DADE WATER AND SEWER DEPARTMENT

QUALITY VALUE ECONOMIC GROWTH

MDC Water Conservation Incentives-*LODGING*

- **Hotels/Motels High Efficiency Fixture Rebates (100 rooms <)**
  - Toilets/Faucets
  - Built before 1996
  - WaterSense-certified toilets
  - Max 75 rebates/year
  - Up to $50/fixture

- **FREE Showerhead Retrofit Exchange (100 rooms <)**
  Unlimited

MIAMI-DADE WATER AND SEWER DEPARTMENT

QUALITY VALUE. ECONOMIC GROWTH.

MDC Water Conservation Incentives-*COMMERCIAL*

- **Schools/Commercial Buildings**
  - Toilets
  - Built before 1996
  - WaterSense-certified toilets
  - Max 75 rebates/year
  - Up to $50/fixture

- **Seaport/School Board MDC**
- **Pre-Rinse Spray Valves for Commercial Kitchens**
  - FREE Pre-rinse spray valves
  - Water Efficiency Audit

MIAMI-DADE WATER AND SEWER DEPARTMENT

QUALITY VALUE. ECONOMIC GROWTH.

MDC Water Conservation Incentives-*LANDSCAPE*

- **HOA Landscape Irrigation Evaluation**
  - on-site evaluation of landscape irrigation system
  - recommendations provided
  - Up to $500/year for five years
- **Large Property Landscape Irrigation Evaluation**
  - on-site evaluation of landscape irrigation system
  - recommendations provided
  - Provided a FREE ET controller
  - Up to $2,850/property

UF | IFAS Extension
UNIVERSITY of FLORIDA

Water Savings Achieved Through Water Conservation Incentives

YEAR	WATER SAVINGS (MGD)		SAVINGS/ YR
	Planned	Reported	
2007	1.09	1.21	
2008	2.24	3.48	2.26
2009	3.53	4.90	1.43
2010	4.82	6.54	1.64
2011	6.10	8.47	1.92
2012	7.22	10.07	1.61
2013	8.42	11.23	1.15
2014	9.54	12.34	1.12
2015	10.66	14.14	1.80
2016	11.70	15.08	0.94
2026	19.62		

Legislative Measures

- **Ordinances:**
  - January 2009 Water Use Efficiency Standards for new developments and renovations
  - Landscape Ordinance Amendments (Section 18-A)
  - Permanent Landscape Irrigation Ordinance (Ord. 09-25)

Florida-Friendly Landscaping™ PROGRAM

Standards for New Developments

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE[a,b]
Lavatory, private	1.5 gpm at 60 psi
Lavatory, public, (metering)	0.25 gallon per metering cycle
Lavatory, public (other than metering)	0.5 gpm at 60 psi
Shower head[a,c]	1.5 gpm at 80 psi
Sink faucet	1.5 gpm at 60 psi
Urinal	>>Waterless or 0.5 gallon per flushing cycle
Water closet	1.28 gallons per flushing cycle
Dishwasher (residential)	6.5 gallons per cycle or less (Energy Star/Water Sense Certified)[c]
Dishwasher (commercial)	Less than 1.2 gallons per rack for fill and dump machines and less than 0.9 gallons per rack for all other types of machines
Dishwasher (under the counter machines)	1.0 gallon or less per rack for high-temperature machines and 1.7 gallons per rack for low-temperature machines
Washing machine	Water factor of 8 or lower (Energy Star/Water Sense Certified)[c]

Permanent Landscape Irrigation Ordinance

- Watering is not allowed between 10 am and 4 pm.
- Restrictions apply to all users of municipal and county water utilities and wells.
- Residents and businesses with an **ODD-numbered street address** is permitted on **WEDNESDAYS and SATURDAYS** from 12 a.m. to 10 a.m. and/or from 4 p.m. to 11:59 p.m.
- Residents and businesses with an **EVEN-numbered street address**, no street address, or who water both even and odd addresses within the same zones, including multi-family units and Homeowner Association is permitted on **THURSDAYS and SUNDAYS** from 12 a.m. to 10 a.m. and/or from 4 p.m. to 11:59 p.m.
- Hand-watering with one hose fitted with an automatic shut-off nozzle is allowed for 10 minutes per day for landscape stress relief and to prevent plant die-off.

Outreach

- **Commission Events**
  - Senior Health Fair
- **Community Events**
  - Festivals
  - Earth Day
  - Adopt a Tree
  - Baynanza
  - Fairchild Tropical Garden
- **Education**
  - WE-LAB
  - Brochures
  - Free Giveaways
  - Promote WASD water
- **IFAS Extension Service**
  - Rain Barrel Workshops
  - Florida Friendly Landscape Classes
  - School Garden Program

Attended 18 Events in 2016

Earth Day CELEBRATION

Children's Campaign

- School Presentations
- Green School Challenges w/Dream n Green
- Outreach Events for Kids
- Every Drop Counts Poster Contest
  - >1,600 submittals
  - 90 schools participated
  - Gifts/Award Ceremony/Display Posters

Water Loss Reduction

- Real Water Loss
  - Active System Leak Detection
  - Replacement & Repair
  - Pressure Management
  - Reduce WTP Water Losses
  - Improve System Design
  - Customer Leak Detection
- Apparent Losses
  - Ensure Accuracy in Metering
  - Reduce Unmetered Supplies
  - Proper Meter Sizing & Type
  - Improve Calibration of Wholesale Meters
- Annual Report
  - Mandated by WUP
  - AWWA Methodology

Water Loss Reduction Projects

- Testing Mobile Network System
  - Heavy Traffic/Excessive Noise

- Initial Survey Underwater Pipes

Award Winning

- NACo Achievement Award for Water Use Efficiency Program
- NACo Achievement Award for Water Resources Management
- Florida Section of the American Water Works Association
  - ✔ Best In Class *Landscape Irrigation Campaign*
  - ✔ Show of Excellence *High Efficiency Toilet Rebate Project*
  - ✔ Show of Excellence *Senior Retrofit Project*
  - ✔ Best In Class *Standards Manual*
  - ✔ Meritorious Award *"Every Drop Counts" Poster Contest*

- 2013 South Florida Water Management Commendation
- Audubon Florida Excellence in Water Conservation Award

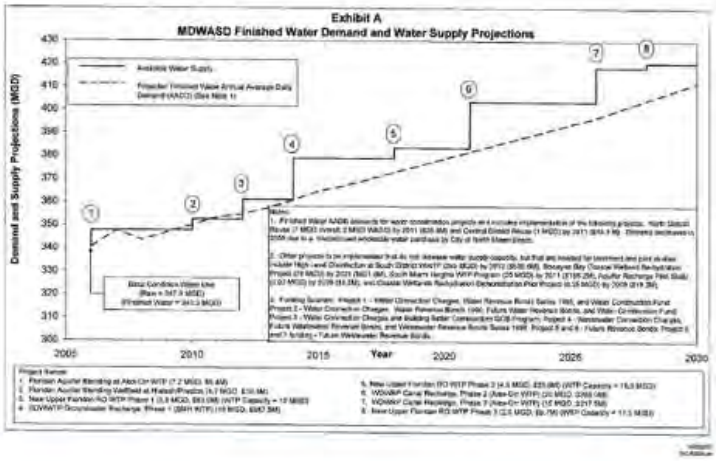
Benefits

- Able to obtain 20-Year Consolidated Water Use Permit (WUP) in 2007
- Extended WUP in 2015, to year 2035, due to water savings from Water Conservation Program
- Success Regularly Cited in Budget Book and State of the County Address
- Positive Public Relations for WASD

Benefits Continued….

- Preserve Resource for Future Use
- Minimize Operating Costs by Reduced Pumping, Distributing Less Water & Collecting & Treating Wastewater
- Eliminate or Defer Expensive Alternative Water Supply (AWS) Projects
- Minimize Operating Costs Associated with AWS Projects

2007 WUP Projections

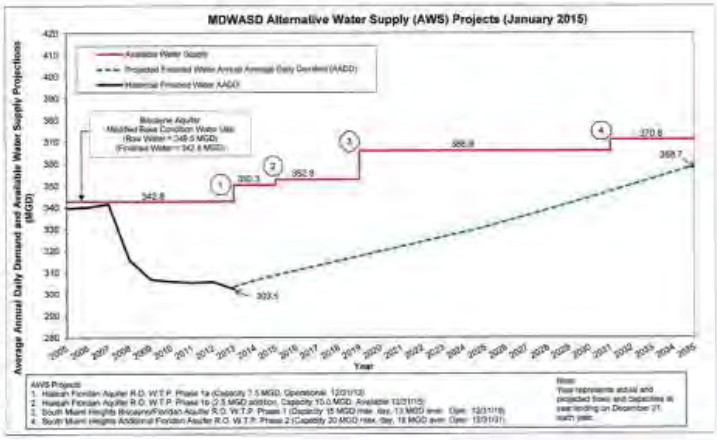


415 MGD
by 2030

MIAMI-DADE WATER AND SEWER DEPARTMENT

QUALITY VALUE. ECONOMIC GROWTH.

2015 WUP Projections



347 MGD
by 2030

359 MGD
by 2035

EXHIBIT 9

MIAMI-DADE WATER AND SEWER DEPARTMENT

QUALITY VALUE. ECONOMIC GROWTH.

Results = 20 MGD Savings

Using 20 MGD less than in 2006

- Tiered Water Rate Structure to Promote Conservation
- Water Loss Reduction
- Permanent Landscape Irrigation Restrictions
- Water Conservation Initiatives

Rebates Issued To Date

• Toilets:	25,382
• Aerators:	68,395
• Showerheads Giveaways:	24,532
• Showerheads:	574
• Faucets:	1,375
• Clothes Washers:	1,786
• Irrigation & Landscape:	1,253

Every Drop Counts

MIAMI-DADE WATER AND SEWER DEPARTMENT

QUALITY, VALUE, ECONOMIC GROWTH.

Appendix B:

Outreach events conducted in 2017

DATE	EVENT	PURPOSE
01/12/17	Elon University	educational presentation
01/13/17	WELAB	Wolfson Campus presentation
01/28/17	Fairchild Tropical Garden	judge debates
02/23/17	WELAB	Miami Beach City Hall presentation
02/25/17	Annual Founder's Day	Coral Reef Senior HS
03/04/17	WELAB	City of Doral presentation
03/21/17	MDC Wolfson Campus	TriBeta Biological Society presentation
03/22/17	University Miami	World Water Day
03/23/17	MDC Wolfson Campus	Environmental Education presentation
03/29/17	WELAB	MDC InterAmerica Campus presentation
03/30/17	Holmes Elementary	Rain Barrel & School Garden
04/01/17	21st Annual Miami River Day	Lummus Park
04/05/17	University Miami Wellness Week	The Lennar Center
04/08/17	Miami Science Barge	display water/wastewater presentation
04/15/17	Sustain-a-Village	2nd Annual Earth Day/Holistic Lifestyle Festival
04/19/17	South Miami Hospital Earth Day Event	educational/outreach event
04/19/17	Earth Day @ Baptist Hospital	educational/outreach event
04/20/17	Homestead Hospital Earth Day Event	educational/outreach event
04/20/17	Perry Ellis International Earth Day	educational/outreach event
04/20/17	WELAB	Palmetto Middle School presentation
04/21/17	Earth Day Baptist Hospital	educational/outreach event
04/20/17	University Miami Earth Day	educational/outreach event
04/22/17	Baynanza	educational/outreach event

04/22/17	DROP event - Children's Museum	educational/outreach event
04/22/17	City of Doral Earth Day Event	educational/outreach event
04/23/17	Surfside Earth Day Event	educational/outreach event
04/23/17	WELAB	Village of Pinecrest presentation
04/23/17	Norland Health Fair Event	educational/outreach event
04/24/17	Miami Springs Women's Club	educational presentation
04/29/17	Farm Share Event-Commissioner Martinez	educational/outreach event
05/12/17	Spring into Wellness Fair	educational/outreach event
05/19/17	City of Doral Employee Train Workshop	educational/outreach event
06/19/17	DeHostos Senior Center Health Fair	educational/outreach event
06/06/17	Miami Springs Senior Center	educational/outreach event
06/07/17	Drop event - iPrep Academy	educational presentation
06/22/17	WELAB Baptist Hospital	educational/outreach event
07/08/17	Adopt a Tree event @ Homestead	educational/exchange/outreach
07/11/17	FIU presentation @ Maria's class - sustainability	presentation
07/13/17	Landscape irrigation symposium	presentation
07/20/17	Miami Children's Museum	DROP presentation
09/23/17	Senior Expo @ Mary Collins Center	educational/outreach event
10/12/17	Terra Environmental Research Institute Imagine a Day Without Water	educational/outreach event presentation
10/13/17	Terra Environmental Research Institute	educational/outreach event presentation
10/14/17	Guarijo Festival - Hialeah	educational/outreach event
10/17/17	iHeart Miami Active Adults Health EXPO	educational/outreach event
10/23/17	Miami Springs Scouts Meeting	educational/outreach event
10/27/17	Wellness Fair - SPC Gov't Center	educational/outreach event
10/29/17	Adopt a Tree event @ FIU Campus	educational/outreach event
11/04/17	Farm Share Event-Commissioner Martinez	educational/outreach event
11/06/17	Senior Presentation Homestead Community Ctr	educational/outreach event presentation

11/08/17	WELAB workshop - MDC North Campus	educational/outreach event presentation
11/09/17	WELAB workshop - Stirrup Elementary	educational/outreach event presentation
11/10/17	Plumbing & Mechanical Trade Show & EXPO	educational/outreach event
11/15/17	WELAB workshop - Dante B. Fascell Elementary	educational/outreach event presentation
11/16/17	Building 305 presentation - South Beach	educational/outreach event presentation
11/17/17	Sustainability Workshop - Miami Beach (SOBE)	educational presentation
11/29/17	FSAWWA Water Conservation Symposium	presentation
12/07/17	Baptist Hospital - West Kendall WaterVentures	educational/outreach event
12/11/17	Miami Springs Watersmart presentation	presentation
12/13/17	Building 305 presentation - Miami	presentation

60 events - 2017

Appendix C:

Rebate cards

1) High efficiency fixture rebates including toilets, faucets and showerheads

WATER SAVING TIPS

miami-dade water

Consejos para ahorrar agua • Konsèy pou ekonomize dlo

INDOORS | *ADENTRO • ANNDAN:*

FILL BASIN WITH WATER TO WASH DISHES

Llene una vasija con agua para lavar los platos

Plen senk la dlo pou lave vesèl

RUN DISHWASHERS & WASHING MACHINES WITH FULL LOADS

Use la fregadora de platos y la lavadora de ropa con cargas completas

Plen machin yo nèt lè wap lave vesèl oswa lè wap lave rad

INSTALL WATERSENSE CERTIFIED TOILETS

Instale inodoros con certificación WaterSense

Enstale watè ijenik ki sètifye mak WaterSense

USE HIGH-EFFICIENCY FAUCETS & SHOWERHEADS

Utilice grifos y cabezales de ducha de alta eficiencia

Itilize wobinèt ak tèt tiyo douch ki ekonomize dlo

TURN OFF WATER WHILE: WASHING HANDS, SOAPING YOUR HAIR & BODY & BRUSHING TEETH

Cierre el agua mientras se lave las manos, se enjabone el cabello y el cuerpo y mientras se cepille los dientes

Fèmen tiyo yo pandan wap: lave men w, savonnen cheve w, kò w, ak dan w

FIX LEAKY FAUCETS & TOILETS

Repare los grifos e inodoros que tengan salideros de agua

Repare tiyo wobinèt ak watè ijenik ki koule

OUTDOORS | *AFUERA • DEYÒ:*

FOLLOW YEAR-ROUND IRRIGATION RESTRICTIONS

No watering from 10 a.m. to 4 p.m. ODD-numbered addresses may water Wed. & Sat. EVEN-numbered addresses may water Thurs. & Sun.

Siga las restricciones de riego durante todo el año

Se puede regar de 4:00 p. m. a 10:00 a. m. Direcciones con números PARES pueden regar jueves y domingo.

Respekte restriksyon sou irigasyon yo pandan tout lane.

Ou gen dwa wouze apati 4è nan aprèmidi rive a 10è nan maten. Adrès chif PÈ yo gendwa wouze jedi ak dimanch.

INSTALL A DRIP IRRIGATION SYSTEM

Instale un sistema de riego por goteo

Enstale yon sistèm goot irigasyon

WATER PLANTS BEFORE 10 AM OR AFTER 4 PM

Riegue las plantas antes de las 10:00 a.m. o después de las 4:00 p.m.

Wouze plant yo anvan 10è dimaten oswa apre 4è nan laprèmidi

LANDSCAPE WITH NATIVE FLORIDA PLANTS

Siembre plantas originarias de la Florida

Fè jaden lakou ak plant endijèn Florid

USE A BUCKET, NOT A HOSE, TO WASH YOUR CAR

Use un cubo para lavar su carro, no una manguera

Itilize yon bokit, pa yon kawotchou dlo, pou lave machin ou

2) Senior high efficiency toilet rebates

Save Water, $ave Cash!

Ahorre Agua, Ahorre Dinero ▪ Ekonomize Dlo, Ekonomize Lajan!

SENIOR high-efficiency toilet rebate program

Programa de reembolso de inodoro de alta eficiencia para personas de tercera edad
Pwogram rabè pou twalèt ijenik ki pa gaspiye dlo pou granmoun aje

For property owners with a SENIOR TAX EXEMPTION

Para propietarios con exención de impuestos de tercera edad
Pou pwopriyetè kay ki gen egzanpsyon taks pou granmoun aje

Receive up to $300 for purchase and installation of high-efficiency toilets

Recibe hasta $300 por la compra e instalación de inodoros de alta eficiencia
Resevwa jiska $300 pou acha ak enstalasyon wajè ijeniik ki konsève dlo

- For more information:
  Allen Zepeda 786-552-8119
  Allen.Zepeda@miamidade.gov
  www.miamidade.gov/waterconservation

QUALITY. VALUE. ECONOMIC GROWTH.
WWW.MIAMIDADE.GOV/WATER

3) Industrial, Commercial and Institutional (ICI) toilet rebates

4) Landscape Irrigation Rebates

SAVE WATER! SAVE MONEY!

¡Ahorra agua! ¡Ahorra dinero! *Ekonomize Dlo, Ekonomize Lajan!*

LANDSCAPE IRRIGATION REBATE PROGRAM

Programa de Reembolso para Irrigación de Áreas Verdes
Pwogram Ranbousman pou Irigasyon Espas Vèt

Items eligible for a rebate, plus more:

Productos elegibles para reembolso, y más *Atik ki eligib pou ranbousman, ak lòt ankò*

PROGRAM REQUIREMENTS:

Requisitos del programa *Kondisyon pou patisipe nan pwogram nan*

✓ **Must have** functioning automatic sprinkler system

Debe tener un sistema de regadío funcional *Fèt pou gen yon sistèm awozay otomatik ki fonksyone*

✓ **Original receipts** for proof of work completed

Se requiere comprobante de pago *Resi orijinal pou bay kòm prèv travay ki fin fèt*

For More Information visit www.miamidade.gov/waterconservation, email pmart@miamidade.gov or call 786-552-8972.

A FRIENDLY REMINDER

Recordatorio amistoso *Yon rapèl amikal*

NO WATERING between 10 a.m. and 4 p.m.

NO RIEGUE entre 10 a.m. y 4 p.m. *Yo pa otorize awozay fèt ant 10 a.m. a 4 p.m.*

ODD numbered addresses may water WED & SAT

Direcciones con números IMPAR pueden regar MIÉRCOLES Y SABADO *Adrès chif enpè yo gen dwa fè awozay MÈKREDI AK SAMDI*

EVEN numbered address may water THURS & SUN

Direcciones con números PAR pueden regar JUEVES Y DOMINGO *Adrès chif pè yo gen dwa fè awozay JEDI AK DIMANCH*

WaterSense — Meets EPA Criteria

QUALITY. VALUE. ECONOMIC GROWTH.
WWW.MIAMIDADE.GOV/WATER

UF IFAS Extension UNIVERSITY of FLORIDA

Appendix D:

Poster contest entry forms

Miami-Dade Water and Sewer Department
10th Annual Every Drop Counts Poster Contest

Miami Dade Water & Sewer Department presents the '***Every Drop Counts***' Poster Contest! The contest is part of the Children's Education Campaign adopted by the Miami-Dade Board of County Commissioners through Resolution 89-09. The contest is open to all Miami Dade County elementary school students from kindergarten through fifth grade.

WHO: Elementary school students grades K - 5 located in Miami Dade County
WHAT: 2018 Poster Contest. This year's theme: ***"Conserve: Be Water Wise - It Affect Our Lives!"***
WHEN: Deadline for poster submittal is February 2, 2018
WHERE: Obtain forms @ www.miamidade.gov/waterconservation, email: waterconservation@miamidade.gov or by calling the Water Use Efficiency Section at 786-552-8972
PRIZES: All entries will receive a *FREE* DROP t-shirt! In addition, thirteen first place winners, one from each County Commission District, will receive additional prizes and be recognized at a Miami-Dade Board of County Commissioners meeting in May 2018. First place and honorable mention winning posters will be displayed in the lobby of the Stephen P. Clark Gov't Center during water conservation month, April 2018.

What are the contest rules?

- Artwork must be original! Students are invited to use their talents to illustrate the importance of conserving water. Posters will be judged on creativity, relevance, legbility and adherence to guidelines. Posters containing computer-generated graphic, photographs, collages, 3-D artwork or trademarked art will be disqualified
- Artwork must be drawn horizontally (landscape) on 11"x17" or smaller white poster paper only. ***Any entry that exceeds these dimensions will be disqualified!***
- Students can use crayons, watercolors, poster paint, colored pencils, or magic markers to create the artwork. Reflective materials, i.e. glitter, gold stars, cotton balls, straw, magazine pictures or fabric glued to the art are prohibited and will result in disqualification
- Must depict the 2018 theme ***Conserve: Be Water Wise-It Affects Our Lives!***
- All entries must contain an official entry form. Part I is filled out by the **Art Teacher** and Part II is filled out, signed and dated by the student's **Parent** or **Guardian**. The completed entry form must be securely taped to the back of the poster, with student name and school information facing outward
- Artwork should not be folded when mailed/submitted
- ***Any form not signed by the Parent/Guardian will be disqualified.***

How do I enter?

Fill out the entry form on the reverse side and submit to the address listed at bottom of page

Remember to securely attach the completed entry form to the back of the poster using tape, with student name and school information facing outward.

Visit www.miamidade.gov/green/kid-miami-poster-contest.asp to learn about additional contests for K-12 students

All entries must be postmarked no later than February 2, 2018

PART I: ART TEACHER - PLEASE FILL OUT COMPLETELY (SCHOOL INFORMATION)

School Name (print clearly) _____

Address: _____ Zip Code: _____

Art Teacher Name: _____ Contact Phone: _____

Art Teacher's E-mail Address: _____ Art Teacher T-shirt size (adult): **S M L XL 2XL 3XL**

PART II: PARENT - PLEASE FILL OUT COMPLETELY

Student Name (print clearly) _____

Address: _____ Zip Code: _____

Home Phone: _____ Grade: _____ Age: _____

Commission District: _____ (visit http://www.miamidade.gov/commiss/commission-districts.asp to determine your District)

Circle T Shirt Size (Youth Sizes): **S M L XL**

PARENT/GUARDIAN INFORMATION

Name (print clearly) _____

Parent/Guardian Email Address: _____

Signature of Parent/Guardian: _____* Date_____

**By signing you are allowing Miami-Dade County and Miami-Dade Water & Sewer Department to utilize the poster for educational or promotional purposes and acknowledge that all entries become the property of Miami-Dade County and will not be returned. Additionally, by signing you hereby grant the right to use, reuse, publish, and republish photographs of the listed child in whole or in part, individually or in connection with other material, in any and all media now or hereafter known, including the internet, and for educational and/or promotional purpose, without restriction.*

Poster Contest Rules:

Any poster not following these guidelines will be disqualified.

- Artwork must be original. Posters containing computer-generated graphic, photographs, collages, 3-D artwork or trademarked art will be disqualified.
- Artwork must be drawn horizontally (landscape) on 11x17" or smaller white poster paper only. Any entry that exceeds these dimensions will be disqualified.
- Students may use crayons, watercolors, poster paint, colored pencils, or magic markers to create the artwork.
- The entry must depict the theme of ***Conserve: Be Water Wise-It Affects Our Lives!***
- All entries must contain an official entry form. Part I must be filled out by the Art Teacher and Part II filled out, signed and dated by the Parent or Guardian. Secure the completed entry form to the back of the poster using tape, with student name and school information facing outward.
- Artwork should not be folded when mailed/submitted.

All entries must be postmarked no later than February 2, 2018.

Website: www.miamidade.gov/waterconservation

All entries should be delivered or mailed to:
Miami-Dade Water and Sewer Department
Water Use Efficiency Section - Room 554-11
3071 SW 38 Avenue
Miami, Florida 33146

Appendix E:

Poster contest t-shirt

MIAMI-DADE COUNTY
2018 EVERY DROP COUNTS POSTER CONTEST

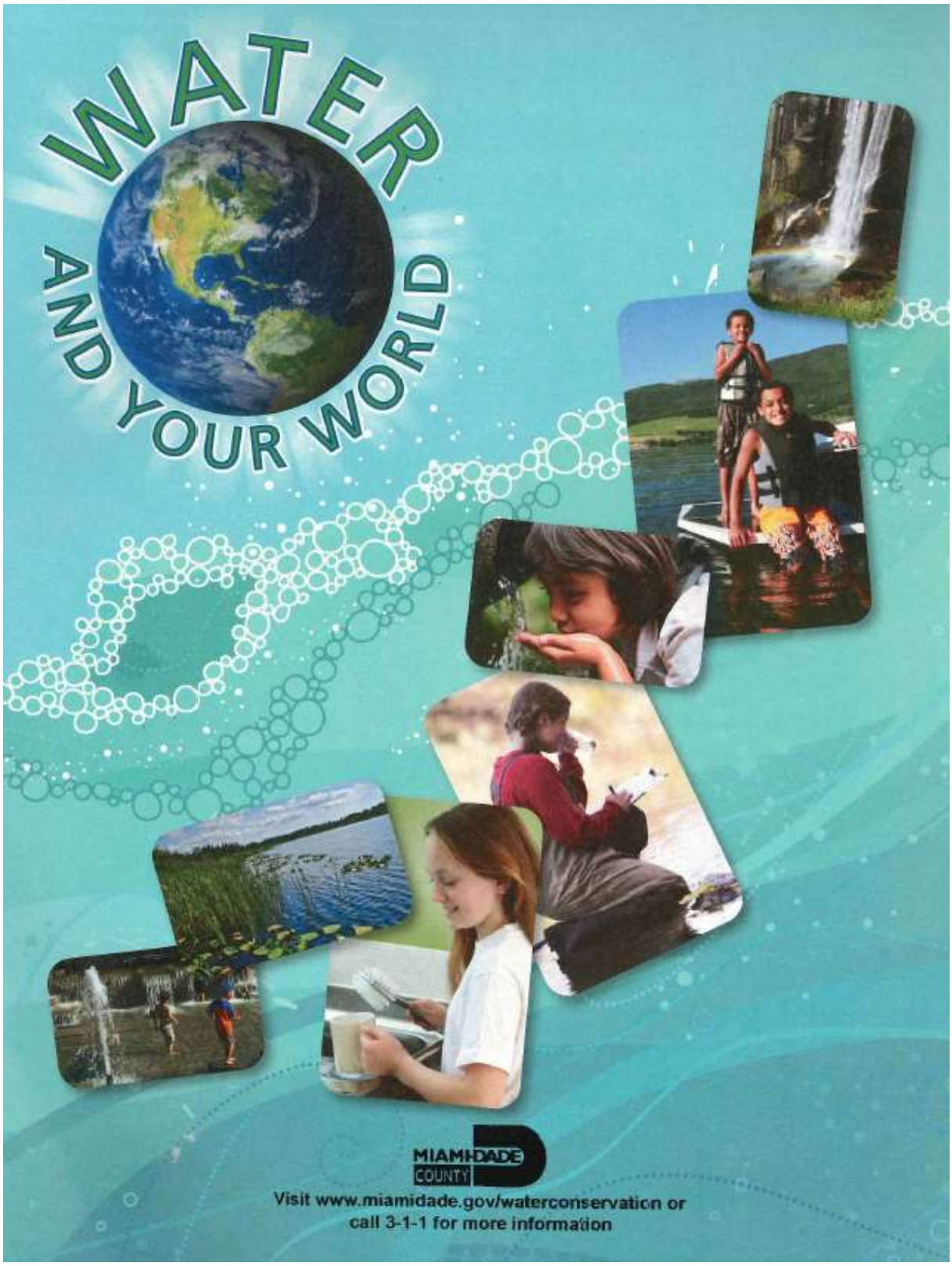
Front

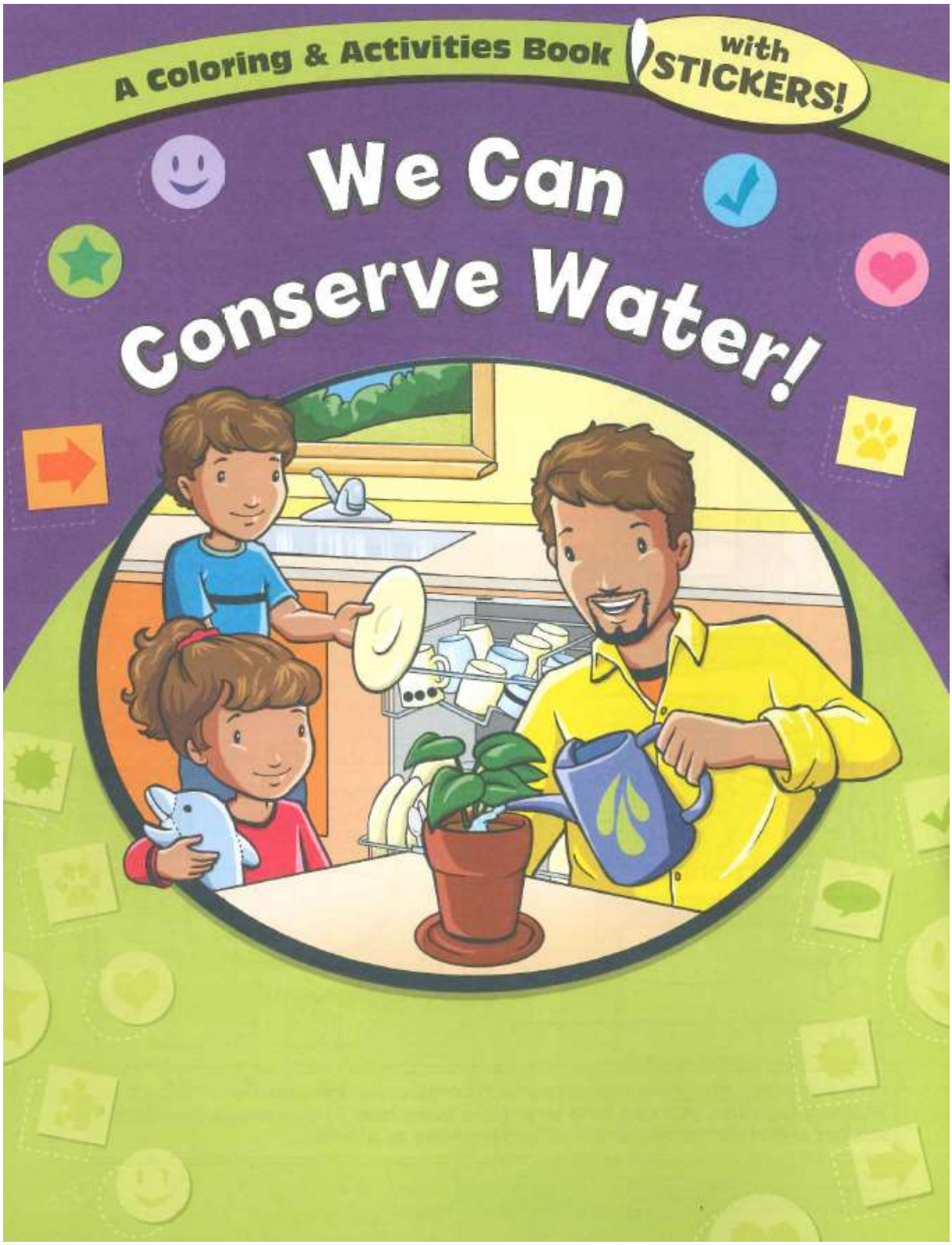
CONSERVE:
Be water wise,
it affects our lives!

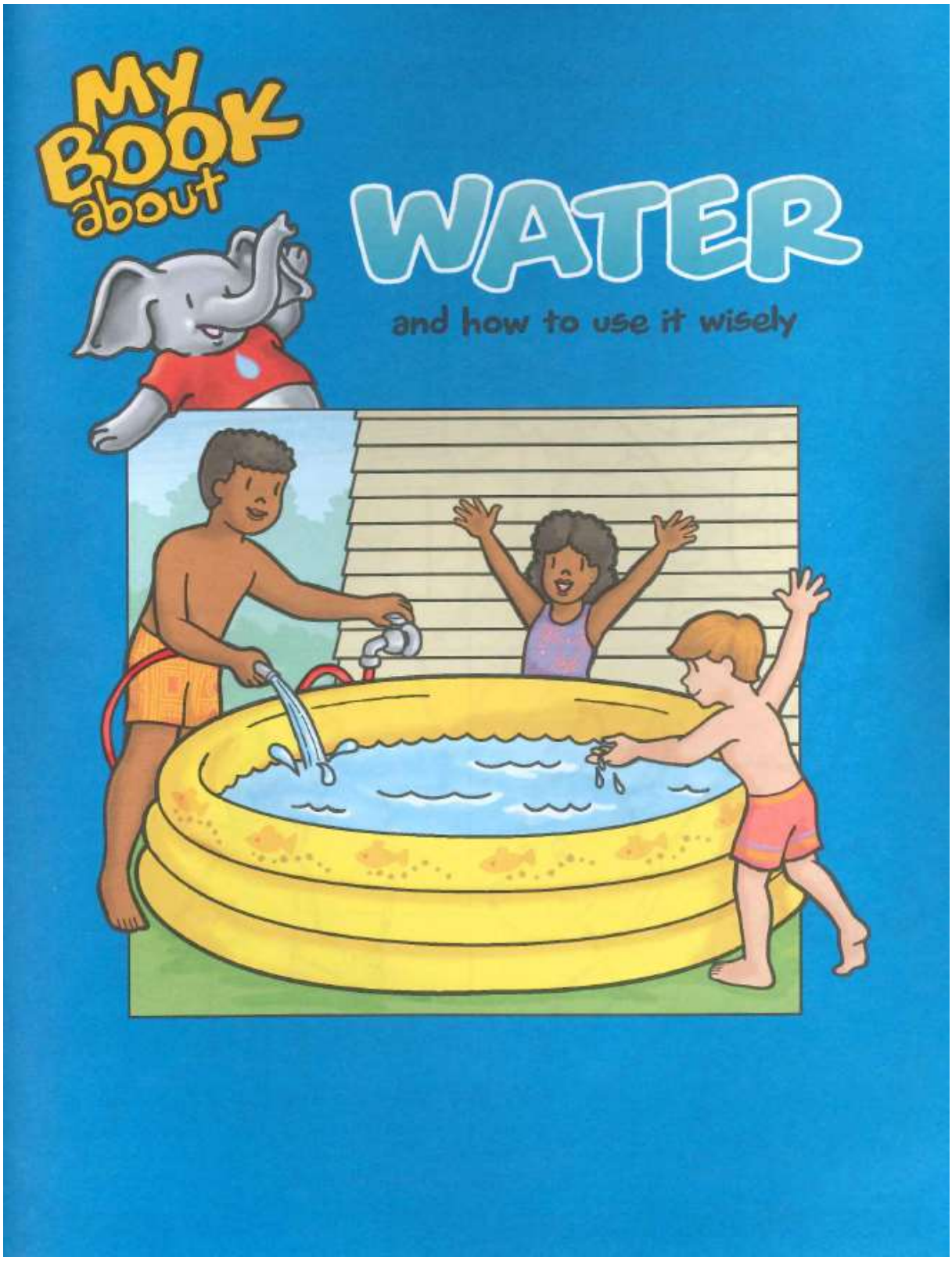
Back

Appendix F:

Children's water conservation education books


WATER
AND YOUR WORLD
MIAMI-DADE
COUNTY
Visit www.miamidade.gov/waterconservation or
call 3-1-1 for more information


A Coloring & Activities Book
with STICKERS!
We Can Conserve Water!


MY BOOK about
WATER
and how to use it wisely

Appendix G:

2017 news releases

- 1/9/2017 Resolve to save money and water in 2017
- 1/18/2017 UF/IFAS Extension Miami Dade County hosts Rain Barrel Workshop at Tropical Park
- 3/8/2017 WASD provides tips, asks for help to protect Miami Dade County's water source during National Groundwater Awareness Week
- 3/20/2017 Fix a Leak Week is March 20-26, 2017
- 3/21/2017 March 22 is World Water Day
- 3/23/2017 Lights, camera, action. Student filmmakers can see their PSA on the big screen
- 3/27/2017 A photo of water is worth a thousand words and maybe some prizes
- 4/4/2017 Miami Dade County Mayor Carlos G. Gimenez pledges to conserve water for national Mayor's Challenge for Water Conservation
- 4/13/2017 with Extreme Dry Season, remember that Miami Dade County has year-round watering restrictions
- 4/28/2018 Pint size Picassos to be honored for artistic talent designing Every Drop Counts Posters
- 5/8/2017 Miami Dade Water and Sewer Department Celebrates National Drinking Water Week May 7-13, 2017
- 6/7/2017 Miami Dade Water and Sewer Department offers household tips for rainy season
- 6/21/2017 Miami Dade Water and Sewer Department offers water tips for First Day of Summer
- 7/5/2017 Save water and money during Smart Irrigation Month
- 7/6/2017 Miami Dade Water and Sewer Department to exchange showerheads/lightbulbs at Saturday's Adopt a Tree in Homestead
- 7/7/2017 Student filmmaker wins Miami Dade Water and Sewer Department PSA Contest
- 8/15/2017 New rebate program for high efficiency commercial toilets
- 9/29/2017 Miami Dade Water and Sewer Department asks you to "Imagine a Day Without Water"
- 10/26/2017 Miami Dade Water and Sewer Department to exchange showerheads and lightbulbs at Sunday's Adopt a Tree Event
- 11/7/2017 The Miami Dade Water and Sewer Department invites student artists to enter the 10th Annual Every Drop Counts Poster Contest

Visit http://www.miamidade.gov/water/prindex.asp?year=2017&web=water for news releases.

Appendix H:

Single-family and large properties irrigation evaluation application form

1) Single family home evaluation application form.

AGREEMENT FOR SINGLE FAMILY WATER USE EFFICIENCY PROJECT
Landscape Irrigation Rebate Program

The Miami-Dade Water and Sewer Department's (WASD) Landscape Irrigation Rebate Program provides financial incentives for homeowners in Miami-Dade County to modify their irrigation systems to use water more efficiently. Improved efficiency will reduce the amount of water used and create healthier landscapes. **Applicants must have a functioning irrigation system on the property to qualify for the rebate program.** Approved applicants will receive an irrigation assessment before and after the system is retrofitted. Assessments are free and provide information to homeowners on appropriate, cost effective retrofits to their landscape and irrigation system. **A pre-assessment of the property must be completed for program qualification.**

Invoices and proof of payment verifying retrofit installation must be submitted within six months from date of post evaluation assessment conducted by UF/IFAS Extension Miami Dade County Florida Friendly Landscaping ™ (FFL) Program's Urban Conservation Unit (UCU) or by August 31st, whichever comes first. Rebates are available for the retrofits and/or modifications approved by UCU listed below:

List of Approved Irrigation Retrofits

Rebates are available for the following irrigation retrofits (including **parts and labor**):

Item #	Qualified retrofit	Maximum possible rebate
1	Purchase and installation of a rain sensor	$120
2	Purchase and installation of an EPA Water Sense labeled smart irrigation controller or soil moisture sensor (not both) if system is already digital	$400
3	Removal of irrigation where determined not needed or obstructed, or relocate sprinklers for better coverage	$200
4	Installation of plants that are drought tolerant combined with removal of irrigation. Plants must be listed in publication titled "Low Maintenance Landscape Plants for South Florida" available at: http://bit.ly/18d2n75	$400
5	Redesign of irrigation system to create hydrozones (i.e. grass on a separate zone from shrubs)	$400
6	Modification and installation of multi-stream, multi-trajectory nozzles to provide matched precipitation or better coverage (high efficiency sprays not applicable)	$400
7	Installation of micro-irrigation (drip line, micro-jets, or bubblers) in ornamental planting areas	$400
8	Conversion of mechanical system to EPA Water Sense labeled smart irrigation controller /electric system (includes timer and valves)	$500
9	Purchase and installation of a rainwater collection system (rain barrel must be 70 gal or more)	$400
10	Purchase and installation of flow sensor	$400

All costs to be reimbursed must be documented. Participants must provide original receipts/invoices to UCU. Receipts/invoices must be itemized showing the cost for labor and individual parts installed and show payment in full in order to qualify for the rebate. Proof of payment can be in the form of a cancelled check, money order, in-store sales receipt or credit card statement.

A maximum of $500.00 is available for each participant, per program year for up to five years. Rebates shall be granted on a first-come first-serve basis until program funds are expended.

Revised 9/19

This agreement is entered into on ____/____/20____ by and between WASD, the UCU and_____, Single Family Homeowner hereinafter referred to as the SFH for the Landscape Irrigation Rebate Program under the following **TERMS:**

1. **A functioning irrigation system is located on the property.** The SFH will be contacted to schedule an on-site pre-evaluation of the property's irrigation system and landscaping by the UCU. Following the pre-evaluation inspection, the UCU will provide the SFH with a written report with recommendations on how to make the landscape and irrigation system more water efficient.
2. The WASD will reimburse the SFH **up to but not exceeding five hundred dollars ($500)** for retrofits made to the existing irrigation system. **Only modifications that are on the "List of Approved Irrigation Retrofits" (front page) or a modification that is approved by the UCU prior to retrofit will be reimbursable.**
3. After retrofits are completed, **the SFH must schedule a post-retrofit evaluation of the system by the UCU** to ensure retrofits are operating properly. To receive a rebate each SFH must:
   a. Receive a pre-retrofit evaluation of their irrigation system;
   b. Receive a post-retrofit evaluation of their irrigation system;
   c. Provide itemized receipts and approved payment for parts and labor used in retrofits.
4. Retrofits must be completed, and invoices and proof of payment submitted within **six months** from date of post evaluation inspection conducted by UCU or August 31st, whichever comes first.
5. The undersigned is solely responsible for permitting and retention of a licensed contractor to perform the installation work.
6. Failure to maintain a scheduled appointment or failure to reply to UCU requests for an appointment will result in dismissal of the application.
7. The SFH will be informed of other water conservation programs available from WASD through the UCU and will receive information about FFL.
8. The SFH will allow the UCU to release copies of both pre and post evaluation reports to FFL, WASD, and the South Florida Water Management District.
9. The SFH agrees to hold harmless WASD, FFL and the UCU for any loss or damage to SFH property or landscaping.
10. The SFH may participate in the program up to, but not exceeding 5 times. **The SFH may apply in each program year (October 1– September 30) and must complete retrofits, submit invoices and proof of payment within six months of initial assessment or August 31st of the program year, whichever comes first in accordance with this Agreement.**

Homeowner (Print Name) _____ **Phone** _____

Address_____ **City** _____ **State** _____ **Zip Code**_____

Signature_____ **Email** _____

Have you previously enrolled in this program? If so, what year? _____

Office Use

Laura Vasquez, FFL/UCU Supervisor (lavasquez@ufl.edu)
Signature _____ Date signed _____

Jesus Lomeli, FFL/UCU Urban Horticulture Program Specialist (jlomeli@ufl.edu)
Signature _____ Date signed _____

Mail to: Miami-Dade County Extension Service FFL Program 18710 SW 288 St. Homestead, FL 33030
Phone: 305-248-3311 Fax: 305-246-2932

Revised 9/19

2) Large property evaluation application form.

AGREEMENT FOR LARGE PROPERTY WATER USE EFFICIENCY PROJECT
Landscape Irrigation Rebate Program

This agreement is entered into on ____/____/20____ by and between Miami-Dade Water and Sewer Department (WASD), UF/IFAS Extension Miami-Dade County Florida-Friendly Landscaping™ (FFL) Program's Urban Conservation Unit (UCU) and_____ (property name) for property located at:_____(address) for the Large Property Landscape Irrigation Rebate Program under the following **TERMS:**

1. Applicants must have a **functioning irrigation system on the property** to qualify for the rebate program (i.e. functioning pump, irrigation lines and spray heads located throughout the property). The property representative will be contacted to schedule an on-site pre-evaluation of the property's irrigation system and landscaping by the UCU. Following the pre-evaluation inspection, the UCU will provide the property representative with a written report with recommendations on how to make the landscape and irrigation system more water efficient. **A pre-assessment of the property must be completed for program qualification.**
2. WASD, through the UCU, will provide a smart irrigation controller system for the property, if applicable. The smart controller system installation, retrofits, invoices & proof of payment must be completed within 6 months from date of post evaluation inspection conducted by UCU or August 31st of the program year, whichever comes first.
3. To qualify for the rebate, the property representative shall purchase materials and/or contract with a licensed irrigation company to make the retrofits and repairs as recommended in the UCU pre-evaluation report.
4. On completion of the system upgrade/retrofit and installation of the smart controller system, the property representative will contact the UCU to conduct a post-evaluation to determine what upgrade/retrofits made to the irrigation system that are eligible for a rebate and that the system is operating with the smart controller system.
5. To receive a rebate for the landscape irrigation retrofits, the property must submit detailed, itemized documentation of the type of retrofit completed and the cost of each retrofit. Documentation may include, but not limited to an invoice, work order, on-line order confirmation and/or receipt. Additionally, proof of payment must be included with the documentation in the form of a cancelled check, money order, in-store sales receipt or credit card statement. All documentation must be submitted within 6 months from date of post evaluation inspection conducted by UCU or August 31st, whichever comes first. WASD will reimburse the **legal property owner <u>up to but not exceeding two thousand eight hundred fifty dollars ($2850.00)</u>** for implementing the recommended upgrade/retrofits and installation of the smart controller system. Stipulations apply to how the reimbursement will be allotted as follows:

Revised 09/2019

A. WASD will provide a **FREE** EPA Water Sense labeled weather-based smart irrigation controller and cover installation costs including labor **up to $850.00** or;

B. WASD will **provide up to $1,500** to a property owner that purchases and installs their own EPA Water Sense labeled weather-based smart irrigation controller;

C. **A maximum of $800 may be used towards repairs of irrigation systems,** including the following:

Repairs: $800 max
Fix pipe leaks
Replace cracked or broken sprinklers
Replace leaky valves

D. **Remainder of rebate can be applied to retrofits and upgrades**, including the following:

Retrofits:		
Install micro-irrigation irrigation	Rainwater catchment systems > 500 gallons	Purchase of soil moisture sensor, flow sensor or expansion modules
Install electric valves to replace index valves	Removal of irrigation where determined not needed	Redesign irrigation system with separate zone based on plant type (hydro-zones)
Purchase of additional EPA Water Sense labeled weather-based smart irrigation controller	Replace grass with low-maintenance drought-tolerant plants combined with removal of irrigation where these plants are located	Modification and installation of multi-stream, multi-trajectory nozzles to provide matched precipitation or better coverage (high efficiency sprays not applicable)

6. The property will be informed of other water conservation programs available from WASD through the UCU. The property will also be given educational materials on the FFL Program and the possibility of FFL Yard recognition, where applicable.
7. The property will allow the UCU to release copies of both pre and post evaluation reports to FFL, WASD, and South Florida Water Management District.
8. The property agrees to hold harmless WASD, FFL, and the UCU for any loss or damage to commercial property and/or landscaping.

Property Owner or Authorized Representative (Print Name) _____

Title _____ **Phone** _____ **Email** _____

Office Address _____ **City** _____ **Zip Code** _____

Irrigated acreage on property: _____

Signature _____ **Date Signed** _____

Office Use

EPA WaterSense

Laura Vasquez, FFL/UCU Supervisor (lavasquez@ufl.edu)
Signature _____ Date signed _____

Jesus Lomeli, FFL/UCU Urban Horticulture Program Specialist (jlomeli@ufl.edu)
Signature _____ Date signed _____

Mail to: Miami-Dade County Extension Service FFL Program 18710 SW 288 St. Homestead, FL 33030
Phone 305-248-3311 Fax 305-246-2932

Revised 09/2019

Appendix I:

Residential customer schedule of rates as of 10/1/20

MIAMI-DADE WATER AND SEWER DEPARTMENT
SCHEDULE OF RATES

RESIDENTIAL CUSTOMER

WATER	
Monthly	**Effective October 1, 2020**
Meter Charge:	Monthly Charge
Meter Size	
5/8" plus 2,244 gallons (3ccf)	$4.07
1" plus 2,244 gallons (3ccf)	$13.25
1.5" plus 2,244 gallons (3ccf)	$25.63
2" plus 2,244 gallons (3ccf)	$40.47
3" plus 2,244 gallons (3ccf)	$80.08
Flow Rate All Usage:	Monthly Charge
Usage per 100 cubic feet (ccf):	
4 to 17 ccf	$3.3004
18 ccf and over	$7.9833
Usage per 1,000 gallons:	
2,245 to 12,716 gallons	$4.4123
12,717 gallons and over	$10.6729
Quarterly	
Meter Charge:	Quarterly Charge
Meter Size:	
5/8" plus 6,732 gallons (9ccf)	$12.21
1" plus 6,732 gallons (9ccf)	$39.75
1.5" plus 6,732 gallons (9ccf)	$76.89
2" plus 6,732 gallons (9ccf)	$121.41
3" plus 6,732 gallons (9ccf)	$240.24
Flow Rate All Usage:	Quarterly Charge
Usage per 100 cubic feet (ccf):	
10 to 51 ccf	$3.3004
52 ccf and over	$7.9833
Usage per 1,000 gallons:	
6,733 to 38,148 gallons	$4.4123
38,149 gallons and over	$10.6729

NOTE: 100 cubic feet (ccf) equals 748 gallons

Residential: a retail customer/account consisting of a single family residence or duplex being served by a common meter

Appendix J:

Advertising campaigns

1) Fix a Leak Week

Campaign: Fix a Leak Week (March 19-25)

Budget Summary FY 17-18

Media	Budget	Run Dates	Media Strategy
	WASD		
Social media	$ 4,000.00	March 1- 25	Social media ads reaching different target audiences on Facebook, Instagram, & Twitter
YouTube	$ 4,000.00		Boosting *WaterSense* video as skippable pre-roll video before uses view intended content
Online Web Banners	$ 3,958.00		Various sizes of online banner ads across a broad network of news and information websites on desktop, mobile and tablet devices. Ad tactics include behavioral & keyword targeting.
Radio	$ 12,000.00		30 second radio commercials that will air on English, Spanish and Creole radio stations from 3/19-3/25 ("Fix a Leak Week")
Transit	$ 2,000.00		Interior cards placed inside buses and trains
Print	$ 4,000.00		Print advertising in newspapers, magazines and community periodicals that span across all 13 Commission Districts in Miami-Dade County. Ads will appear in English, Spanish and Creole language newspapers in color.
Flat Screens/ESIS Panels	added value		Digital displays on the Transit platforms as well as SPCC lobby screens
Expenditures:	*$ 29,958.00*		
Total Expenses	$ 29,958.00		
Total Budget	$ 29,958.00		
Balance	$ -		

2) Build a Better Bathroom

Water and Sewer Department

Campaign: Build a Better Bathroom

Budget Summary FY 16-17

Media	Budget	Run Dates	Media Strategy
	WASD		
Online Web Banners	$ 2,771.68	August 1-31, 2017	Various sizes of online banner ads across a broad network of news and information websites on desktop, mobile and tablet devices. Ad tactics include behavioral & keyword targeting.
SEM	$ 1,155.77		Search engine marketing will feature pay-per-click search campaign on the largest search engines (Google, Yahoo and Bing) and focused on key terms associated with this campaign.
Gmail	$ 2,009.38		Gmail ads are expandable ads at the top of people's tabs in Gmail. With a click, these interactive ads expand into email-sized ads that can include videos and images, and can be used to meet a variety of advertising goals.
Social Media (Facebook)	$ 4,000.00		Social media ads reaching different target audiences on Facebook
Newspapers	$ 9,645.03		Print advertising in newspapers and community periodicals that span across all 13 Commission Districts in Miami-Dade County. Ads will appear in English, Spanish and Creole language newspapers in color.
Radio	$ 20,000.00		Residents will be informed through radio commercials that will air on a diverse mixture of English and Spanish radio stations.
Flat Screens/ESIS Panels	added value		Digital displays on the Transit platforms as well as SPCC lobby screens
Expenditures:	*$ 39,581.86*		
Total Expenses	$ 39,581.86		
Total Budget	$ 40,000.00		
Balance	$ 418.14		

3) Smart Irrigation

Campaign: Smart Irrigation

Goal: Promote awareness of proper irrigation methods and of free assessment report

Target Audience: Residential Home/Property owners in Miami-Dade County that participate in lawn care activities

Languages: English, Spanish & Creole

Media	Budget	Run Dates	Programming
	Invoice WASD		
Outdoor (Billboards)	$ 24,960.00	April 2016	Mix of streetpole banners, static billboards and digital billboards in prime areas.
Facebook/Instagram	$ 5,040.00	April 2016 & July 2016	Social media ads reaching the target audience on Facebook and Instagram, using a mix of campaign videos and images for promotion.
Content Marketing	$ 4,000.00		Campaign-related stories written by news outlets that are boosted as "native advertising" alongside similar web content.
Online (E-mail Marketing, Display Banners & Retargeting)	$ 10,000.00		Premium placement of web banner ads and retargeting that are geo-targeted to Miami-Dade County and appear on sites that target homeowners, gardening, lawn care and home improvement behaviors. E-mail marketing targeted to residential homeowners interested in lawn care and smart irrigation.
Radio	$ 14,960.00		:15 spots airing during traffic reports on several stations during AM & PM drive time
YouTube	$ 2,035.37		Promoting "Smart Irrigation Tips" videos, focused on topics such as lawn care, water conservation, sprinkler system, etc.
Newspaper	$ 5,259.63		Print ads in various newspapers reaching all 13 Commission Districts in Miami-Dade County.
	$ 66,255.00		

August 14, 2000

CERTIFIED: 7099 3400 0000 5273 9927
RETURN RECEIPT

Mr. Jeff Rosenfeld
Senior Supervising Hydrogeologist
Regulation Department / Water Use Division
South Florida Water Management District
PO Box 24680
West Palm Beach, Fl. 33416-4680

RECEIVED
WATER USE DIVISION

RE: Miami-Dade Water and Sewer Department
Hialeah / Preston / Miami Springs / Northwest Wellfields
Water Use Permit No. 13-00037-W

Dear Mr. Rosenfeld:

In accordance with limiting condition no.32 of the referenced permit, the following is a description of the schedule for operation of the surface water control structure located on the Northwest wellfield (NWWF) protection canal for District approval.

As per the control authority, Department of Environmental Resources Management (DERM), structures located in the NWWF protection canal are operated according to the specific circumstances. These structures are not automated and therefore would be manually opened or closed at specific canal elevations. Normal operation for the new water control structure is to be closed to induce flow to the west and south. The control structure would remain closed if groundwater stages are high and there is no need for additional water from the L-30 canal. It would be opened if the opposite is the case. The structure would also be closed in anticipation of a hurricane event to prevent additional flow from entering the secondary system canals.

Should you have any questions, please call Ms. Bertha M. Goldenberg, P.E. at (305) 669-5711.

Sincerely,

Jorge Rodriguez
Assistant Director

BMG/dje

c: Harvey Kottke, DERM Isaac Sznol, DERM

Exhibit 22

MEMORANDUM OF UNDERSTANDING
BETWEEN
THE U.S. DEPARTMENT OF INTERIOR,
THE GOVERNOR OF THE STATE OF FLORIDA,
THE SOUTH FLORIDA WATER MANAGEMENT
DISTRICT AND METROPOLITAN DADE COUNTY

This Memorandum of Understanding (hereinafter sometimes referred to as the "Agreement"), made and entered into this _____ day of _____ 1993, by and between the U.S. Department of the Interior, after called the "SECRETARY", the Governor of the State of Florida, hereinafter called the "GOVERNOR", the South Florida Water Management District, a public corporation of the State of Florida, hereinafter called the "DISTRICT", and Metropolitan Dade County, a political subdivision of the State of Florida, hereinafter referred to as the "COUNTY".

ARTICLE I. BACKGROUND AND OBJECTIVES

WHEREAS, the COUNTY proposes to construct a West Dade Wellfield, hereinafter referred to as the "Wellfield", and has applied to the DISTRICT for a Water Use permit (application #890731-12), requesting in said application to withdraw up to 40 million gallons per day from the Biscayne Aquifer and an allocation from the Floridan Aquifer System consistent with the Water Use permit, and

EXHIBIT 24

EXHIBIT 35A

WHEREAS, the parties hereto desire to enter into this Agreement in order to provide adequate assurances that, in the event said Water Use permit is issued, withdrawals of water pursuant to said permit shall not cause adverse impacts to the hydrologic resources of the Everglades National Park, and

WHEREAS, the Everglades National Park Protection and Expansion Act of 1989, 16 U.S.C. secs. 410r-5 et seq., hereinafter referred to as the "Act" (Appendix "A"), provides that no Federal license, permit, approval, right of way or assistance shall be granted or issued with respect to the West Dade Wellfield (to be located in the Bird Drive Drainage Basin, as identified in the Comprehensive Development Master Plan for Dade County, Florida) until the SECRETARY, the Governor of the State of Florida, the South Florida Water Management District and Dade County, Florida enter into an agreement providing that any Water Use permit issued by the South Florida Water Management District for the Wellfield must include certain limiting conditions, which limiting conditions are included within this Agreement;

NOW THEREFORE, in consideration of the mutual covenants hereinafter set forth, the parties hereto agree as follows:

ARTICLE II. TERMS AND CONDITIONS

A. The foregoing recitals are true and correct and are incorporated herein by this reference.

B. Conditions to be Incorporated if Water Use Permit is Issued by DISTRICT.

(1) If the DISTRICT issues any Water Use permit for the Wellfield pursuant to Application #890731-12, the Wellfield's peak pumpage shall not exceed the forty (40) million gallons per day from the Biscayne Aquifer. The appropriate allocation from the Floridan Aquifer System will be addressed in the permit based on DISTRICT Water Use Criteria and demonstrated hydraulic characteristics of the Floridan Aquifer System.

(2) Notwithstanding anything to the contrary herein, if the DISTRICT issues any Water Use permit for the Wellfield, the withdrawals authorized by the permit shall be limited to an amount which meets the applicable water use permitting criteria of the DISTRICT in Chapter 373, Florida Statutes, and Chapter 40E-2, F.A.C., which criteria shall in no event be applied to permit an allocation of water which would allow water withdrawals or pumpage rates which exceed the limitations set forth in the Act;

(3) If the DISTRICT issues a Water Use permit for the Wellfield, the permit shall include the following additional

EXHIBIT 35B

conditions regarding DISTRICT-declared water shortages:

(a) Reasonable, enforceable measures to limit demand on the Wellfield in times of water shortage, which shortage impacts the South Dade Water Use Basin, as defined in Chapter 40E-21, F.A.C., or the Everglades National Park, hereinafter called the "PARK". During such times of water shortage, the District has been authorized to declare areas of critical water supply pursuant to Chapter 373, Florida Statutes, and Chapter 40E-21, F.A.C.

(b) If, during times of a declared water shortage, the DISTRICT fails to limit demand on the Wellfield pursuant to Article II, Sec. B (3)(a) above, or if the DISTRICT limits demand on the Wellfield pursuant to Article II, Sec. B (3)(a) above, but the SECRETARY or the GOVERNOR certifies that operation of the Wellfield is still causing Adverse Impacts (see Article II, Sec. G herein) on the hydrologic resources of the PARK, as determined by the monitoring program described in Appendix "B", the GOVERNOR shall require the DISTRICT to take necessary actions to alleviate the Adverse Impacts, including temporary reduction or cessation in pumpage from the Biscayne Aquifer from the Wellfield, use of alternative sources of water from the Floridan Aquifer System or additional reductions in demand. This certificate issued

by the SECRETARY or the GOVERNOR shall specify what temporary corrective measures shall be required in the event of a disagreement regarding Adverse Impacts. In the event of such a disagreement, the COUNTY agrees to implement the corrective measures specified in the certificate pending outcome of the dispute resolution or correction of the Adverse Impacts, whichever occurs first. In the event that the COUNTY does not agree that Adverse Impacts have occurred in a particular case, the dispute mechanism set forth in Article IX, Sec. D of this Agreement shall apply. The term 'Adverse Impacts', as used herein, shall have the meaning set forth in Article II, Sec. G of this Agreement.

(c) Nothing herein shall be construed to limit the ability of the SECRETARY or the GOVERNOR to declare that Adverse Impacts to the hydrologic resources of the PARK have occurred when no water shortage has been declared by the DISTRICT.

C. The COUNTY agrees to comply with all conditions contained in any Water Use permit issued by the DISTRICT for the Wellfield.

D. The COUNTY agrees to operate the Wellfield in a manner which will not result in Adverse Impacts to hydrologic resources of

EXHIBIT 35C

the PARK. Upon notification by the SECRETARY or the GOVERNOR of Adverse Impacts to PARK hydrologic resources pursuant to the protocol developed in accordance with Article II, Sec. G herein the COUNTY shall take necessary actions to alleviate the Adverse Impacts, including temporary reduction or cessation in pumpage from the Biscayne Aquifer from the Wellfield, use of alternative sources of water from the Floridan Aquifer System, or additional reductions in demand. In the event that the COUNTY does not agree that Adverse Impacts have occurred, the COUNTY shall only be required to implement the temporary corrective measures indicated in the certificate of Adverse Impacts pending resolution of the dispute pursuant to the dispute resolution procedure set forth in this Section. In the event of such a dispute, the COUNTY shall serve notice of the dispute upon the party which certified the Adverse Impacts. Upon notification of a dispute, the Key Officials indicated in Article IV, shall convene (by whatever communication device is expedient) within seventy-two (72) hours to determine whether Adverse Impacts have occurred. If the Key Officials substantiate that Adverse Impacts have occurred, they shall then decide what final action must be taken to alleviate the Adverse Impacts, and the COUNTY shall be required to take such action. If the Key Officials determine that Adverse Impacts have not occurred, the COUNTY shall not be required to continue corrective actions. If the Key Officials are unable to reach a unanimous resolution of the issue, then the decision of the SECRETARY shall be determinative.

E. If the DISTRICT issues a Water Use permit for the Wellfield, then, prior to the operation of the Wellfield, the COUNTY shall fund development of the following:

(1) the plan entitled, "Hydrologic Monitoring Program for the West Dade Wellfield" (Appendix "B"); and

(2) a stochastic hydrologic model (hereinafter "the model"), which model will be developed in cooperation with the DISTRICT and the PARK, and which will be used to develop an operation schedule for the Wellfield.

F. If the DISTRICT issues a Water Use permit for the Wellfield then, prior to the operation of the Wellfield, the COUNTY shall, with the cooperation of the PARK and the DISTRICT, implement the plan entitled, "Hydrologic Monitoring Program for the West Dade Wellfield" (Appendix "B"). The parties to this Agreement agree that this monitoring plan shall be implemented for a minimum of one (1) calendar year prior to operation of the Wellfield, in order to obtain a sufficient data base to allow for the calibration of the stochastic hydrologic model. All data, models and model output pertaining to the monitoring or determination of impacts related to the planning, development, implementation, or operation of the Wellfield shall be made available to all parties to this Agreement upon request.

G. Upon development and calibration of the model, the SECRETARY shall provide a protocol for timely [illegible] to the GOVERNOR, the DISTRICT and the COUNTY when Adverse Impacts to the hydrologic resources of the PARK have occurred. The term "Adverse Impacts", for purposes of this Agreement, shall be defined as negative changes in water levels or flows in the L-31N canal and shall be equal to (a) specified hydrologic unit(s) of measurement which can reliably be detected by the monitoring network, and which can reasonably be linked by the model as being caused by the Wellfield. After collection of the base data as set forth in Article II, Sec. F herein, said unit(s) of measurement shall be determined by agreement of the parties hereto and incorporated as the standard(s) by which said "Adverse Impacts" shall be determined by inclusion in an appendix hereto (Appendix "C"), which appendix, upon approval of all parties to this Agreement, shall automatically be made a part of this Agreement without need for amendment hereto.

H. Nothing herein shall be construed to restrict the DISTRICT from exercising its authority under Chapter 373 of the Florida Statutes, or its implementing rules and permit conditions, to prevent or mitigate any adverse water resource impacts or impacts to existing legal uses and land uses.

EXHIBIT 35D

I. Nothing herein shall be construed to restrict the COUNTY from applying for any other permit(s), or for modifications to any permit(s), if issued, provided, however, that this Agreement, unless amended, shall not pertain to any such application(s). If the COUNTY applies for a modification of (a) permit(s), or (an) additional permit(s) for this Wellfield, then this Agreement shall be modified, or a new agreement shall be entered into between the four parties hereto.

J. The DISTRICT agrees that it shall consider the feasibility of a water control structure on the C-4 canal (which structure would be located near the intersection of the C-4 Canal and the Dade-Broward Levee) as part of the revaluation of the Central and Southern Florida Flood Control Project or the first update of the Lower East Coast Regional Water Supply Plan.

K. Notwithstanding anything to the contrary herein, the DISTRICT does not warrant or guarantee in any way that it shall issue any Water Use permit to the COUNTY.

ARTICLE III. TERM OF AGREEMENTS; RENEWAL

A. Initial Term. This Agreement shall become effective upon the issuance of a Water Use permit for the Wellfield and shall have an initial term of fifty (50) years (which is the statutory

maximum period of time for which a consumptive use permit may be issued by the South Florida Water Management District) or that period of time during which the Wellfield remains in operable condition, whichever is less

B. Renewal Term. In the event that the initial term of this Agreement is fifty (50) years, this Agreement shall be automatically renewed for one (1) additional term of fifty (50) years, unless, prior to ninety (90) days before the expiration of said initial term, any of the parties to this Agreement notifies all other parties of its intent not to renew this Agreement.

C. Effect On Permit(s). Any permit issued by the DISTRICT shall be for the period of time which is stated in the permit, which time period need not coincide with the effective term of this Agreement. Similarly, the failure to renew this Agreement shall not effect the validity of any applicable Water Use permit(s) in existence at the time of said failure to renew.

ARTICLE IV. KEY OFFICIALS

The following key officials (the "Key Officials") are authorized to act on behalf of the parties hereto in all matters undertaken pursuant to the terms of this Agreement:

EXHIBIT 35E

THE U.S. DEPARTMENT OF INTERIOR: The Superintendent of the PARK, or authorized delegate, will provide review and approval of terms of all agreements, will be the authorized representative for service as required herein of all notices on the SECRETARY and participation in the dispute resolution mechanism set forth in Article II, Sec. D herein, and will exercise the authority to approve conduct of cooperative projects with regards to the conditions contained herein. The Assistant Director of the South Florida Research Center shall act as the authorized technical representative for the PARK with regard to the technical scope of this Agreement.

THE GOVERNOR OF THE STATE OF FLORIDA: The Secretary of the State of Florida Department of Environmental Protection (DEP), or authorized delegate, will provide review and approval of terms of all agreements, will be the authorized representative for service as required herein of all notices on the GOVERNOR and participation in the dispute resolution mechanism set forth in Article II, Sec. D herein, and will exercise the authority to approve conduct of cooperative projects with regards to the conditions contained herein. The Chief of the Bureau of Wetland Resource Management shall act as the authorized technical representative for DEP with regard to the technical scope of this Agreement.

EXHIBIT 35F

THE SOUTH FLORIDA WATER MANAGEMENT DISTRICT: The Executive Director, or authorized delegate, will provide review and approval of terms of all agreements, will be the authorized representative for service as required herein of all notices on the DISTRICT and participation in the dispute resolution mechanism set forth in Article II, Sec. D herein, and will exercise the authority to approve conduct of cooperative projects with regards to the conditions contained herein. The Director of the Water Use Division's Regulation Department shall act as the authorized technical representative for the DISTRICT with regard to the technical scope of this Agreement.

METROPOLITAN DADE COUNTY: The Director of the Miami Dade Water and Sewer Authority Department, or authorized delegate, will provide review and approval of terms of all agreements, will be the authorized representative for service as required herein of all notices on the COUNTY and participation in the dispute resolution mechanism set forth in Article II, Sec. D herein, and will exercise the authority to approve conduct of cooperative projects with regards to the conditions contained herein. The Director of DERM, or authorized delegate, shall act as the authorized technical representative for the COUNTY with regard to the technical scope of this Agreement.

Written notice shall be provided to all parties of any change in Key Officials within four (4) weeks of such change.

ARTICLE V. AMENDMENT

This Agreement may be modified by amendment upon mutual written agreement of all parties.

ARTICLE VI. NOTICES

All notices required or permitted to be given under the terms and provisions of this Agreement by a party to the other parties shall be in writing and shall be sent by registered or certified mail, return receipt requested, to the parties as follows:

Department of the Interior
Richard S. Ring, Superintendent (Attn: Robert F. Doren)
Everglades National Park
40001 State Road 9336
Homestead, FL 33034-6733

The Governor of the State of Florida
c/o Secretary of the Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
Attn: Chief of the Bureau of Wetland Resource Management

South Florida Water Management District
c/o Executive Director
P.O. Box 24680
West Palm Beach, Florida 33416-4680

Metropolitan Dade County
c/o Director, Miami Dade Water and Sewer Dept
P.O. Box 330316
Miami, Florida 33233

or to such other address as may hereafter be provided by the parties in writing. Notices by registered or certified mail shall be deemed received on the delivery date indicated by the U.S. Postal Service on the return receipt.

ARTICLE VII. VENUE

Any litigation hereunder shall be brought in the appropriate state or federal court in Dade County, Florida.

ARTICLE VIII. HEADINGS

Captions and headings in this Agreement are for ease of reference only and do not constitute a part of this Agreement and

EXHIBIT 35G

shall not affect the meaning or interpretation of any provisions herein.

ARTICLE IX. RIGHTS OF OTHERS

Nothing in this Agreement express or implied is intended to confer upon any person other than the parties hereto any rights or remedies under or by reason of this Agreement.

ARTICLE X. WAIVER

There shall be no waiver of any right related to this Agreement unless in writing signed by the party waiving such right. No delay or failure to exercise a right under this Agreement shall impair such right or shall be construed to be a waiver thereof. Any waiver shall be limited to the particular right so waived and shall not be deemed a waiver of the same right at a later time, or of any other right under this Agreement.

ARTICLE XI. INVALIDITY OF PROVISIONS

The invalidity of one or more of the phrases, sentences, clauses, or Articles contained in this Agreement shall not affect the validity of the remaining portion of the Agreement, provided that the material purposes of this Agreement can be determined and effectuated.

EXHIBIT 35H

ARTICLE XII. AUTHORITY OF PARTIES TO ENTER INTO AGREEMENT

A. Authority of the SECRETARY. The SECRETARY represents that (1) this Agreement has been duly authorized, executed and delivered by the Superintendent, Everglades National Park, pursuant to the authority vested in him by 16 U.S.C. secs. 1 and 1a-1 and 16 U.S.C. sec. 410r-6(i), as the duly authorized representative of the U.S. Department of the Interior for purposes of this Agreement, and (2) the U.S. Department of the Interior has the required power and authority to perform this Agreement.

B. Authority of the GOVERNOR. The GOVERNOR represents that (1) this Agreement has been duly authorized, executed and delivered by the Governor of the State of Florida, and (2) he has the required power and authority to perform this Agreement.

C. Authority of the DISTRICT. The DISTRICT represents that (1) this Agreement has been duly authorized, executed and delivered by the Governing Board of the South Florida Water Management District, and (2) it has the required power and authority to perform this Agreement.

D. Authority of the COUNTY. The COUNTY represents that (1) this Agreement has been duly authorized, executed and delivered by

the Board of County Commissioners as the governing body of the County, and (2) it has the required power and authority to perform this Agreement.

ARTICLE XIII. ALLOCATION OF NATIONAL PARK SERVICE FUNDS

Nothing in this Agreement shall be construed to require the National Park Service to expend funds that have not been lawfully appropriated and administratively allocated for such purpose.

ARTICLE XIV. NONDISCRIMINATION

During the performance of this Agreement, the participants agree to abide by the terms of Executive Order 11246 on nondiscrimination and will not discriminate against any person because of race, color, religion, sex or national origin. The participants will take affirmative action to ensure that applicants are employed without regard to their race, color, religion, sex or national origin.

ARTICLE XV. CONGRESSIONAL PARTICIPATION RESTRICTION

No member or delegate to Congress, or resident Commissioner, shall be admitted to any share or part of this Agreement, or to any benefit that may arise therefrom, but this provision shall not be construed to extend to this Agreement if made with a

corporation for its general benefit.

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by their duly authorized representative(s) on the latest day and year noted below.

WITNESSES:

DEPARTMENT OF THE INTERIOR

By: _____
Superintendent
Everglades National Park

WITNESSES:

THE STATE OF FLORIDA

By: _____
Governor

WITNESSES:

SOUTH FLORIDA WATER MANAGEMENT DISTRICT

By: _____
Chairman, Governing Board

ATTEST:

METROPOLITAN DADE COUNTY

By: _____
Clerk

By: _____
County Manager

Approved as to form and legal sufficiency: _____

Requirement by Permit Condition Report

App No: 201117-4
Permit No: 13-00017-W
Project Name: MIAMI-DADE CONSOLIDATED P W S

Permit Condition No: 11 **Permit Condition Code:** WUSTD021-2

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - LC 2	Calibration report for WELL LC 2	Every Five Years	Every Five Years	28-FEB-2022
WELL - LC 3	Calibration report for WELL LC 3	Every Five Years	Every Five Years	28-FEB-2022
WELL - LC 4	Calibration report for WELL LC 4	Every Five Years	Every Five Years	28-FEB-2022
WELL - LC 5	Calibration report for WELL LC 5	Every Five Years	Every Five Years	28-FEB-2022
WELL - 4 Orr	Calibration report for WELL 4 Orr	Every Five Years	Every Five Years	28-FEB-2022
WELL - 5 Orr	Calibration report for WELL 5 Orr	Every Five Years	Every Five Years	28-FEB-2022
WELL - 6 Orr	Calibration report for WELL 6 Orr	Every Five Years	Every Five Years	28-FEB-2022
WELL - 7 Orr	Calibration report for WELL 7 Orr	Every Five Years	Every Five Years	28-FEB-2022
WELL - 8 Orr	Calibration report for WELL 8 Orr	Every Five Years	Every Five Years	28-FEB-2022
WELL - 9 Orr	Calibration report for WELL 9 Orr	Every Five Years	Every Five Years	28-FEB-2022
WELL - 10 Orr	Calibration report for WELL 10 Orr	Every Five Years	Every Five Years	28-FEB-2022
WELL - 11 SW	Calibration report for WELL 11 SW	Every Five Years	Every Five Years	28-FEB-2022
WELL - 12 SW	Calibration report for WELL 12 SW	Every Five Years	Every Five Years	28-FEB-2022
WELL - 13 SW	Calibration report for WELL 13 SW	Every Five Years	Every Five Years	28-FEB-2022
WELL - 1 Orr	Calibration report for WELL 1 Orr	Every Five Years	Every Five Years	28-FEB-2022
WELL - 2 Orr	Calibration report for WELL 2 Orr	Every Five Years	Every Five Years	28-FEB-2022
WELL - 3 Orr	Calibration report for WELL 3 Orr	Every Five Years	Every Five Years	28-FEB-2022
WELL - 14 SW	Calibration report for WELL 14 SW	Every Five Years	Every Five Years	28-FEB-2022
WELL - 15 SW	Calibration report for WELL 15 SW	Every Five Years	Every Five Years	28-FEB-2022
WELL - 16 SW	Calibration report for WELL 16 SW	Every Five Years	Every Five Years	28-FEB-2022
WELL - 17 SW	Calibration report for WELL 17 SW	Every Five Years	Every Five Years	28-FEB-2022
WELL - 18 SW	Calibration report for WELL 18 SW	Every Five Years	Every Five Years	28-FEB-2022
WELL - 19 SW	Calibration report for WELL 19 SW	Every Five Years	Every Five Years	28-FEB-2022
WELL - 20 SW	Calibration report for WELL 20 SW	Every Five Years	Every Five Years	28-FEB-2022
WELL - SNPCRK-21	Calibration report for WELL SNPCRK-21	Every Five Years	Every Five Years	28-FEB-2023
WELL - SNPCRK-22	Calibration report for WELL SNPCRK-22	Every Five Years	Every Five Years	28-FEB-2023
WELL - SNPCRK-23	Calibration report for WELL SNPCRK-23	Every Five Years	Every Five Years	28-FEB-2023
WELL - SNPCRK-24	Calibration report for WELL SNPCRK-24	Every Five Years	Every Five Years	31-MAR-2022
WELL - 25 SW	Calibration report for WELL 25	Every Five Years	Every Five Years	28-FEB-2022

Exhibit No: 32

Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
	SW			
WELL - 26 SW	Calibration report for WELL 26 SW	Every Five Years	Every Five Years	28-FEB-2022
WELL - 27 SW	Calibration report for WELL 27 SW	Every Five Years	Every Five Years	28-FEB-2022
WELL - 28 SW	Calibration report for WELL 28 SW	Every Five Years	Every Five Years	28-FEB-2022
WELL - 29 W	Calibration report for WELL 29 W	Every Five Years	Every Five Years	28-FEB-2022
WELL - 30 W	Calibration report for WELL 30 W	Every Five Years	Every Five Years	28-FEB-2022
WELL - 31 W	Calibration report for WELL 31 W	Every Five Years	Every Five Years	28-FEB-2022
WELL - 34 SW	Calibration report for WELL 34 SW	Every Five Years	Every Five Years	28-FEB-2022
WELL - 32 SW	Calibration report for WELL 32 SW	Every Five Years	Every Five Years	28-FEB-2022
WELL - 33 SW	Calibration report for WELL 33 SW	Every Five Years	Every Five Years	28-FEB-2022
WELL - ASR/Blending 1W	Calibration report for WELL ASR/Blending 1W	Every Five Years	Every Five Years	31-MAY-2022
WELL - ASR/Blending 3W	Calibration report for WELL ASR/Blending 3W	Every Five Years	Every Five Years	31-MAY-2022
WELL - ASR/Blending 2W	Calibration report for WELL ASR/Blending 2W	Every Five Years	Every Five Years	31-MAY-2022
WELL - ASR/Blending 4SW	Calibration report for WELL ASR/Blending 4SW	Every Five Years	Every Five Years	31-MAY-2022
WELL - ASR/Blending 5SW	Calibration report for WELL ASR/Blending 5SW	Every Five Years	Every Five Years	31-MAY-2022
WELL - NWTN 1	Calibration report for WELL NWTN 1	Every Five Years	Every Five Years	28-FEB-2022
WELL - NWTN 2	Calibration report for WELL NWTN 2	Every Five Years	Every Five Years	28-FEB-2022
WELL - NJ 1	Calibration report for WELL NJ 1	Every Five Years	Every Five Years	28-FEB-2022
WELL - 1 MS Lower	Calibration report for WELL 1 MS Lower	Every Five Years	Every Five Years	31-MAR-2022
WELL - 2 MS Lower	Calibration report for WELL 2 MS Lower	Every Five Years	Every Five Years	31-MAR-2022
WELL - 3 MS Lower	Calibration report for WELL 3 MS Lower	Every Five Years	Every Five Years	31-MAR-2022
WELL - 4 MS Lower	Calibration report for WELL 4 MS Lower	Every Five Years	Every Five Years	31-MAR-2022
WELL - 5 MS Lower	Calibration report for WELL 5 MS Lower	Every Five Years	Every Five Years	31-MAR-2022
WELL - 6 MS Lower	Calibration report for WELL 6 MS Lower	Every Five Years	Every Five Years	31-MAR-2022
WELL - 7 MS Lower	Calibration report for WELL 7 MS Lower	Every Five Years	Every Five Years	31-MAR-2022
WELL - 8 MS Lower	Calibration report for WELL 8 MS Lower	Every Five Years	Every Five Years	31-MAR-2022
WELL - 9 MS Upper	Calibration report for WELL 9 MS Upper	Every Five Years	Every Five Years	31-MAR-2022
WELL - 10 MS Upper	Calibration report for WELL 10 MS Upper	Every Five Years	Every Five Years	31-MAR-2022

Exhibit No: 32

Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - 14 MS Upper	Calibration report for WELL 14 MS Upper	Every Five Years	Every Five Years	31-MAR-2022
WELL - 15 MS Upper	Calibration report for WELL 15 MS Upper	Every Five Years	Every Five Years	31-MAR-2022
WELL - 16 MS Upper	Calibration report for WELL 16 MS Upper	Every Five Years	Every Five Years	31-MAR-2022
WELL - 17 MS Upper	Calibration report for WELL 17 MS Upper	Every Five Years	Every Five Years	31-MAR-2022
WELL - 18 MS Upper	Calibration report for WELL 18 MS Upper	Every Five Years	Every Five Years	31-MAR-2022
WELL - 19 MS Upper	Calibration report for WELL 19 MS Upper	Every Five Years	Every Five Years	31-MAR-2022
WELL - 20 MS Upper	Calibration report for WELL 20 MS Upper	Every Five Years	Every Five Years	31-MAR-2022
WELL - 21 MS Upper	Calibration report for WELL 21 MS Upper	Every Five Years	Every Five Years	31-MAR-2022
WELL - 22 MS Upper	Calibration report for WELL 22 MS Upper	Every Five Years	Every Five Years	31-MAR-2022
WELL - 23 MS Upper	Calibration report for WELL 23 MS Upper	Every Five Years	Every Five Years	31-MAR-2022
WELL - 1 Preston	Calibration report for WELL 1 Preston	Every Five Years	Every Five Years	31-MAR-2022
WELL - 2 Preston	Calibration report for WELL 2 Preston	Every Five Years	Every Five Years	31-MAR-2022
WELL - 3 Preston	Calibration report for WELL 3 Preston	Every Five Years	Every Five Years	31-MAY-2022
WELL - 4 Preston	Calibration report for WELL 4 Preston	Every Five Years	Every Five Years	31-MAR-2022
WELL - 5 Preston	Calibration report for WELL 5 Preston	Every Five Years	Every Five Years	31-MAR-2022
WELL - 6 Preston	Calibration report for WELL 6 Preston	Every Five Years	Every Five Years	31-MAR-2022
WELL - 7 Preston	Calibration report for WELL 7 Preston	Every Five Years	Every Five Years	31-MAR-2022
WELL - 11 Hialeah	Calibration report for WELL 11 Hialeah	Every Five Years	Every Five Years	31-MAR-2022
WELL - 12 Hialeah	Calibration report for WELL 12 Hialeah	Every Five Years	Every Five Years	31-MAR-2022
WELL - 13 Hialeah	Calibration report for WELL 13 Hialeah	Every Five Years	Every Five Years	31-MAR-2022
WELL - 1 NWWF	Calibration report for WELL 1 NWWF	Every Five Years	Every Five Years	31-MAR-2022
WELL - 2 NWWF	Calibration report for WELL 2 NWWF	Every Five Years	Every Five Years	31-MAR-2022
WELL - 3 NWWF	Calibration report for WELL 3 NWWF	Every Five Years	Every Five Years	31-MAR-2022
WELL - 4 NWWF	Calibration report for WELL 4 NWWF	Every Five Years	Every Five Years	31-MAR-2022
WELL - 5 NWWF	Calibration report for WELL 5 NWWF	Every Five Years	Every Five Years	31-MAR-2022
WELL - 6 NWWF	Calibration report for WELL 6	Every Five Years	Every Five Years	31-MAR-2022

Exhibit No: 32

Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
	NWWF			
WELL - 7 NWWF	Calibration report for WELL 7 NWWF	Every Five Years	Every Five Years	31-MAR-2022
WELL - 8 NWWF	Calibration report for WELL 8 NWWF	Every Five Years	Every Five Years	31-MAR-2022
WELL - 9 NWWF	Calibration report for WELL 9 NWWF	Every Five Years	Every Five Years	31-MAR-2022
WELL - 10 NWWF	Calibration report for WELL 10 NWWF	Every Five Years	Every Five Years	31-MAR-2022
WELL - 11 NWWF	Calibration report for WELL 11 NWWF	Every Five Years	Every Five Years	31-MAR-2022
WELL - 12 NWWF	Calibration report for WELL 12 NWWF	Every Five Years	Every Five Years	31-MAR-2022
WELL - 13 NWWF	Calibration report for WELL 13 NWWF	Every Five Years	Every Five Years	31-MAR-2022
WELL - 14 NWWF	Calibration report for WELL 14 NWWF	Every Five Years	Every Five Years	31-MAR-2022
WELL - 15 NWWF	Calibration report for WELL 15 NWWF	Every Five Years	Every Five Years	31-MAR-2022
WELL - EVRGL 1	Calibration report for WELL EVRGL 1	Every Five Years	Every Five Years	28-FEB-2022
WELL - EVRGL 2	Calibration report for WELL EVRGL 2	Every Five Years	Every Five Years	28-FEB-2022
WELL - EVRGL 3	Calibration report for WELL EVRGL 3	Every Five Years	Every Five Years	28-FEB-2022
WELL - ET 2	Calibration report for WELL ET 2	Every Five Years	Every Five Years	28-FEB-2022
WELL - ET 1	Calibration report for WELL ET 1	Every Five Years	Every Five Years	28-FEB-2022
WELL - 1 Medley	Calibration report for WELL 1 Medley	Every Five Years	Every Five Years	31-MAR-2022
WELL - 2 Medley	Calibration report for WELL 2 Medley	Every Five Years	Every Five Years	31-MAR-2022
WELL - 3 Medley	Calibration report for WELL 3 Medley	Every Five Years	Every Five Years	31-MAY-2022
WELL - 5 Medley	Calibration report for WELL 5 Medley	Every Five Years	Every Five Years	31-MAR-2022
WELL - 6 Medley	Calibration report for WELL 6 Medley	Every Five Years	Every Five Years	31-MAY-2022
WELL - RO1 Hialeah	Calibration report for WELL RO1 Hialeah	Every Five Years	Every Five Years	31-DEC-2025
WELL - RO2 Hialeah	Calibration report for WELL RO2 Hialeah	Every Five Years	Every Five Years	31-DEC-2025
WELL - RO3 Hialeah	Calibration report for WELL RO3 Hialeah	Every Five Years	Every Five Years	31-DEC-2025
WELL - RO4 Hialeah	Calibration report for WELL RO4 Hialeah	Every Five Years	Every Five Years	31-DEC-2025
WELL - RO5 Hialeah	Calibration report for WELL RO5 Hialeah	Every Five Years	Every Five Years	31-MAY-2022
WELL - RO6 Hialeah	Calibration report for WELL RO6 Hialeah	Every Five Years	Every Five Years	31-MAY-2022
WELL - RO7 Hialeah	Calibration report for WELL RO7 Hialeah	Every Five Years	Every Five Years	31-MAY-2022

Exhibit No: 32

Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - RO8 Hialeah	Calibration report for WELL RO8 Hialeah	Every Five Years	Every Five Years	31-MAY-2022
WELL - RO9 Hialeah	Calibration report for WELL RO9 Hialeah	Every Five Years	Every Five Years	31-MAY-2022
WELL - RO10 Hialeah	Calibration report for WELL RO10 Hialeah	Every Five Years	Every Five Years	31-MAY-2022
WELL - RO11 Hialeah	Calibration report for WELL RO11 Hialeah	Every Five Years	Every Five Years	31-MAY-2022
WELL - RO12 Hialeah	Calibration report for WELL RO12 Hialeah	Every Five Years	Every Five Years	31-MAY-2022
WELL - RO13 Hialeah	Calibration report for WELL RO13 Hialeah	Every Five Years	Every Five Years	31-MAY-2022
WELL - RO14 Hialeah	Calibration report for WELL RO14 Hialeah	Every Five Years	Every Five Years	31-MAY-2022
WELL - SMH-F1	Calibration report for WELL SMH-F1	Every Five Years	Every Five Years	31-AUG-2022
WELL - SMH-F2	Calibration report for WELL SMH-F2	Every Five Years	Every Five Years	31-AUG-2022
WELL - SMH-F3	Calibration report for WELL SMH-F3	Every Five Years	Every Five Years	31-AUG-2022
WELL - SMH-F4	Calibration report for WELL SMH-F4	Every Five Years	Every Five Years	31-AUG-2022
WELL - SMH-F5	Calibration report for WELL SMH-F5	Every Five Years	Every Five Years	31-AUG-2022
WELL - SMH-F6	Calibration report for WELL SMH-F6	Every Five Years	Every Five Years	31-AUG-2022
WELL - SMH-F7	Calibration report for WELL SMH-F7	Every Five Years	Every Five Years	31-AUG-2022
WELL - SMH-F8	Calibration report for WELL SMH-F8	Every Five Years	Every Five Years	31-AUG-2022
WELL - Cluster 10-1	Calibration report for WELL Cluster 10-1	Every Five Years	Every Five Years	31-AUG-2022
WELL - Cluster 10-2	Calibration report for WELL Cluster 10-2	Every Five Years	Every Five Years	31-AUG-2022
WELL - Cluster 10-3	Calibration report for WELL Cluster 10-3	Every Five Years	Every Five Years	31-AUG-2022

Permit Condition No: 12 **Permit Condition Code:** WUSTD022-2

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - EVRGL 3	Monthly withdrawal for WELL EVRGL 3	Monthly	Quarterly	30-APR-2022
WELL - LC 2	Monthly withdrawal for WELL LC 2	Monthly	Quarterly	30-APR-2022
WELL - LC 3	Monthly withdrawal for WELL LC 3	Monthly	Quarterly	30-APR-2022
WELL - LC 4	Monthly withdrawal for WELL LC 4	Monthly	Quarterly	30-APR-2022
WELL - LC 5	Monthly withdrawal for WELL LC 5	Monthly	Quarterly	30-APR-2022
WELL - ET 1	Monthly withdrawal for WELL ET 1	Monthly	Quarterly	30-APR-2022
WELL - 4 Orr	Monthly withdrawal for WELL 4	Monthly	Quarterly	30-APR-2022

Exhibit No: 32

Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
	Orr			
WELL - 5 Orr	Monthly withdrawal for WELL 5 Orr	Monthly	Quarterly	30-APR-2022
WELL - 6 Orr	Monthly withdrawal for WELL 6 Orr	Monthly	Quarterly	30-APR-2022
WELL - 7 Orr	Monthly withdrawal for WELL 7 Orr	Monthly	Quarterly	30-APR-2022
WELL - 8 Orr	Monthly withdrawal for WELL 8 Orr	Monthly	Quarterly	30-APR-2022
WELL - 9 Orr	Monthly withdrawal for WELL 9 Orr	Monthly	Quarterly	30-APR-2022
WELL - 10 Orr	Monthly withdrawal for WELL 10 Orr	Monthly	Quarterly	30-APR-2022
WELL - 11 SW	Monthly withdrawal for WELL 11 SW	Monthly	Quarterly	30-APR-2022
WELL - 12 SW	Monthly withdrawal for WELL 12 SW	Monthly	Quarterly	30-APR-2022
WELL - 13 SW	Monthly withdrawal for WELL 13 SW	Monthly	Quarterly	30-APR-2022
WELL - 1 Orr	Monthly withdrawal for WELL 1 Orr	Monthly	Quarterly	30-APR-2022
WELL - 2 Orr	Monthly withdrawal for WELL 2 Orr	Monthly	Quarterly	30-APR-2022
WELL - 3 Orr	Monthly withdrawal for WELL 3 Orr	Monthly	Quarterly	30-APR-2022
WELL - 14 SW	Monthly withdrawal for WELL 14 SW	Monthly	Quarterly	30-APR-2022
WELL - 15 SW	Monthly withdrawal for WELL 15 SW	Monthly	Quarterly	30-APR-2022
WELL - 16 SW	Monthly withdrawal for WELL 16 SW	Monthly	Quarterly	30-APR-2022
WELL - 17 SW	Monthly withdrawal for WELL 17 SW	Monthly	Quarterly	30-APR-2022
WELL - 18 SW	Monthly withdrawal for WELL 18 SW	Monthly	Quarterly	30-APR-2022
WELL - 19 SW	Monthly withdrawal for WELL 19 SW	Monthly	Quarterly	30-APR-2022
WELL - 20 SW	Monthly withdrawal for WELL 20 SW	Monthly	Quarterly	30-APR-2022
WELL - SNPCRK-21	Monthly withdrawal for WELL SNPCRK-21	Monthly	Quarterly	30-APR-2022
WELL - SNPCRK-22	Monthly withdrawal for WELL SNPCRK-22	Monthly	Quarterly	30-APR-2022
WELL - SNPCRK-23	Monthly withdrawal for WELL SNPCRK-23	Monthly	Quarterly	30-APR-2022
WELL - SNPCRK-24	Monthly withdrawal for WELL SNPCRK-24	Monthly	Quarterly	30-APR-2022
WELL - 25 SW	Monthly withdrawal for WELL 25 SW	Monthly	Quarterly	30-APR-2022
WELL - 26 SW	Monthly withdrawal for WELL 26 SW	Monthly	Quarterly	30-APR-2022

Exhibit No: 32

Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - 27 SW	Monthly withdrawal for WELL 27 SW	Monthly	Quarterly	30-APR-2022
WELL - 28 SW	Monthly withdrawal for WELL 28 SW	Monthly	Quarterly	30-APR-2022
WELL - 29 W	Monthly withdrawal for WELL 29 W	Monthly	Quarterly	30-APR-2022
WELL - 30 W	Monthly withdrawal for WELL 30 W	Monthly	Quarterly	30-APR-2022
WELL - 31 W	Monthly withdrawal for WELL 31 W	Monthly	Quarterly	30-APR-2022
WELL - 34 SW	Monthly withdrawal for WELL 34 SW	Monthly	Quarterly	30-APR-2022
WELL - 33 SW	Monthly withdrawal for WELL 33 SW	Monthly	Quarterly	30-APR-2022
WELL - 32 SW	Monthly withdrawal for WELL 32 SW	Monthly	Quarterly	30-APR-2022
WELL - NWTN 1	Monthly withdrawal for WELL NWTN 1	Monthly	Quarterly	30-APR-2022
WELL - NWTN 2	Monthly withdrawal for WELL NWTN 2	Monthly	Quarterly	30-APR-2022
WELL - NJ 1	Monthly withdrawal for WELL NJ 1	Monthly	Quarterly	30-APR-2022
WELL - 1 MS Lower	Monthly withdrawal for WELL 1 MS Lower	Monthly	Quarterly	30-APR-2022
WELL - 2 MS Lower	Monthly withdrawal for WELL 2 MS Lower	Monthly	Quarterly	30-APR-2022
WELL - 3 MS Lower	Monthly withdrawal for WELL 3 MS Lower	Monthly	Quarterly	30-APR-2022
WELL - 4 MS Lower	Monthly withdrawal for WELL 4 MS Lower	Monthly	Quarterly	30-APR-2022
WELL - 5 MS Lower	Monthly withdrawal for WELL 5 MS Lower	Monthly	Quarterly	30-APR-2022
WELL - 7 MS Lower	Monthly withdrawal for WELL 7 MS Lower	Monthly	Quarterly	30-APR-2022
WELL - 8 MS Lower	Monthly withdrawal for WELL 8 MS Lower	Monthly	Quarterly	30-APR-2022
WELL - 6 MS Lower	Monthly withdrawal for WELL 6 MS Lower	Monthly	Quarterly	30-APR-2022
WELL - 9 MS Upper	Monthly withdrawal for WELL 9 MS Upper	Monthly	Quarterly	30-APR-2022
WELL - 23 MS Upper	Monthly withdrawal for WELL 23 MS Upper	Monthly	Quarterly	30-APR-2022
WELL - 14 MS Upper	Monthly withdrawal for WELL 14 MS Upper	Monthly	Quarterly	30-APR-2022
WELL - 15 MS Upper	Monthly withdrawal for WELL 15 MS Upper	Monthly	Quarterly	30-APR-2022
WELL - 16 MS Upper	Monthly withdrawal for WELL 16 MS Upper	Monthly	Quarterly	30-APR-2022
WELL - 17 MS Upper	Monthly withdrawal for WELL 17 MS Upper	Monthly	Quarterly	30-APR-2022
WELL - 18 MS Upper	Monthly withdrawal for WELL 18 MS Upper	Monthly	Quarterly	30-APR-2022

Exhibit No: 32

Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - 19 MS Upper	Monthly withdrawal for WELL 19 MS Upper	Monthly	Quarterly	30-APR-2022
WELL - 20 MS Upper	Monthly withdrawal for WELL 20 MS Upper	Monthly	Quarterly	30-APR-2022
WELL - 21 MS Upper	Monthly withdrawal for WELL 21 MS Upper	Monthly	Quarterly	30-APR-2022
WELL - 22 MS Upper	Monthly withdrawal for WELL 22 MS Upper	Monthly	Quarterly	30-APR-2022
WELL - 10 MS Upper	Monthly withdrawal for WELL 10 MS Upper	Monthly	Quarterly	30-APR-2022
WELL - 1 Preston	Monthly withdrawal for WELL 1 Preston	Monthly	Quarterly	30-APR-2022
WELL - 2 Preston	Monthly withdrawal for WELL 2 Preston	Monthly	Quarterly	30-APR-2022
WELL - 3 Preston	Monthly withdrawal for WELL 3 Preston	Monthly	Quarterly	30-APR-2022
WELL - 4 Preston	Monthly withdrawal for WELL 4 Preston	Monthly	Quarterly	30-APR-2022
WELL - 5 Preston	Monthly withdrawal for WELL 5 Preston	Monthly	Quarterly	30-APR-2022
WELL - 6 Preston	Monthly withdrawal for WELL 6 Preston	Monthly	Quarterly	30-APR-2022
WELL - 7 Preston	Monthly withdrawal for WELL 7 Preston	Monthly	Quarterly	30-APR-2022
WELL - 11 Hialeah	Monthly withdrawal for WELL 11 Hialeah	Monthly	Quarterly	30-APR-2022
WELL - 12 Hialeah	Monthly withdrawal for WELL 12 Hialeah	Monthly	Quarterly	30-APR-2022
WELL - 13 Hialeah	Monthly withdrawal for WELL 13 Hialeah	Monthly	Quarterly	30-APR-2022
WELL - 1 NWWF	Monthly withdrawal for WELL 1 NWWF	Monthly	Quarterly	30-APR-2022
WELL - 2 NWWF	Monthly withdrawal for WELL 2 NWWF	Monthly	Quarterly	30-APR-2022
WELL - 3 NWWF	Monthly withdrawal for WELL 3 NWWF	Monthly	Quarterly	30-APR-2022
WELL - 4 NWWF	Monthly withdrawal for WELL 4 NWWF	Monthly	Quarterly	30-APR-2022
WELL - 5 NWWF	Monthly withdrawal for WELL 5 NWWF	Monthly	Quarterly	30-APR-2022
WELL - 6 NWWF	Monthly withdrawal for WELL 6 NWWF	Monthly	Quarterly	30-APR-2022
WELL - 7 NWWF	Monthly withdrawal for WELL 7 NWWF	Monthly	Quarterly	30-APR-2022
WELL - 8 NWWF	Monthly withdrawal for WELL 8 NWWF	Monthly	Quarterly	30-APR-2022
WELL - 9 NWWF	Monthly withdrawal for WELL 9 NWWF	Monthly	Quarterly	30-APR-2022
WELL - 10 NWWF	Monthly withdrawal for WELL 10 NWWF	Monthly	Quarterly	30-APR-2022
WELL - 11 NWWF	Monthly withdrawal for WELL 11	Monthly	Quarterly	30-APR-2022

Exhibit No: 32

Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
	NWWF			
WELL - 12 NWWF	Monthly withdrawal for WELL 12 NWWF	Monthly	Quarterly	30-APR-2022
WELL - 13 NWWF	Monthly withdrawal for WELL 13 NWWF	Monthly	Quarterly	30-APR-2022
WELL - 14 NWWF	Monthly withdrawal for WELL 14 NWWF	Monthly	Quarterly	30-APR-2022
WELL - 15 NWWF	Monthly withdrawal for WELL 15 NWWF	Monthly	Quarterly	30-APR-2022
WELL - EVRGL 1	Monthly withdrawal for WELL EVRGL 1	Monthly	Quarterly	30-APR-2022
WELL - EVRGL 2	Monthly withdrawal for WELL EVRGL 2	Monthly	Quarterly	30-APR-2022
WELL - ET 2	Monthly withdrawal for WELL ET 2	Monthly	Quarterly	30-APR-2022
WELL - 1 Medley	Monthly withdrawal for WELL 1 Medley	Monthly	Quarterly	30-APR-2022
WELL - 2 Medley	Monthly withdrawal for WELL 2 Medley	Monthly	Quarterly	30-APR-2022
WELL - 3 Medley	Monthly withdrawal for WELL 3 Medley	Monthly	Quarterly	30-APR-2022
WELL - 5 Medley	Monthly withdrawal for WELL 5 Medley	Monthly	Quarterly	30-APR-2022
WELL - 6 Medley	Monthly withdrawal for WELL 6 Medley	Monthly	Quarterly	30-APR-2022
WELL - RO1 Hialeah	Monthly withdrawal for WELL RO1 Hialeah	Monthly	Quarterly	30-APR-2022
WELL - RO2 Hialeah	Monthly withdrawal for WELL RO2 Hialeah	Monthly	Quarterly	30-APR-2022
WELL - RO3 Hialeah	Monthly withdrawal for WELL RO3 Hialeah	Monthly	Quarterly	30-APR-2022
WELL - RO4 Hialeah	Monthly withdrawal for WELL RO4 Hialeah	Monthly	Quarterly	30-APR-2022
WELL - RO5 Hialeah	Monthly withdrawal for WELL RO5 Hialeah	Monthly	Quarterly	30-APR-2022
WELL - RO6 Hialeah	Monthly withdrawal for WELL RO6 Hialeah	Monthly	Quarterly	30-APR-2022
WELL - RO7 Hialeah	Monthly withdrawal for WELL RO7 Hialeah	Monthly	Quarterly	30-APR-2022
WELL - RO8 Hialeah	Monthly withdrawal for WELL RO8 Hialeah	Monthly	Quarterly	30-APR-2022
WELL - RO9 Hialeah	Monthly withdrawal for WELL RO9 Hialeah	Monthly	Quarterly	30-APR-2022
WELL - RO10 Hialeah	Monthly withdrawal for WELL RO10 Hialeah	Monthly	Quarterly	30-APR-2022
WELL - RO11 Hialeah	Monthly withdrawal for WELL RO11 Hialeah	Monthly	Quarterly	30-APR-2022
WELL - RO12 Hialeah	Monthly withdrawal for WELL RO12 Hialeah	Monthly	Quarterly	30-APR-2022
WELL - RO13 Hialeah	Monthly withdrawal for WELL RO13 Hialeah	Monthly	Quarterly	30-APR-2022

Exhibit No: 32

Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - RO14 Hialeah	Monthly withdrawal for WELL RO14 Hialeah	Monthly	Quarterly	30-APR-2022
WELL - SMH-F1	Monthly withdrawal for WELL SMH-F1	Monthly	Quarterly	30-APR-2022
WELL - SMH-F2	Monthly withdrawal for WELL SMH-F2	Monthly	Quarterly	30-APR-2022
WELL - SMH-F3	Monthly withdrawal for WELL SMH-F3	Monthly	Quarterly	30-APR-2022
WELL - SMH-F4	Monthly withdrawal for WELL SMH-F4	Monthly	Quarterly	30-APR-2022
WELL - SMH-F5	Monthly withdrawal for WELL SMH-F5	Monthly	Quarterly	30-APR-2022
WELL - SMH-F6	Monthly withdrawal for WELL SMH-F6	Monthly	Quarterly	30-APR-2022
WELL - SMH-F7	Monthly withdrawal for WELL SMH-F7	Monthly	Quarterly	30-APR-2022
WELL - SMH-F8	Monthly withdrawal for WELL SMH-F8	Monthly	Quarterly	30-APR-2022
WELL - Cluster 10-1	Monthly withdrawal for WELL Cluster 10-1	Monthly	Quarterly	30-APR-2022
WELL - Cluster 10-2	Monthly withdrawal for WELL Cluster 10-2	Monthly	Quarterly	30-APR-2022
WELL - Cluster 10-3	Monthly withdrawal for WELL Cluster 10-3	Monthly	Quarterly	30-APR-2022

Permit Condition No: 13 **Permit Condition Code:** WUSTD022-9

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - ASR/Blending 1W	ASR Biscayne wd from ASR 1W	Monthly	Quarterly	30-APR-2022
WELL - ASR/Blending 1W	ASR Injection for Well ASR 1W	Monthly	Quarterly	30-APR-2022
WELL - ASR/Blending 2W	ASR Injection for Well ASR 2W	Monthly	Quarterly	30-APR-2022
WELL - ASR/Blending 2W	ASR Biscayne wd from ASR 2W	Monthly	Quarterly	30-APR-2022
WELL - ASR/Blending 3W	ASR Injection for Well ASR 3W	Monthly	Quarterly	30-APR-2022
WELL - ASR/Blending 3W	ASR Biscayne wd from ASR 3W	Monthly	Quarterly	30-APR-2022
WELL - ASR/Blending 4SW	ASR Injection for Well ASR 4SW	Monthly	Quarterly	30-APR-2022
WELL - ASR/Blending 4SW	ASR Biscayne wd from ASR 4SW	Monthly	Quarterly	30-APR-2022
WELL - ASR/Blending 5SW	ASR Injection for Well ASR 5SW	Monthly	Quarterly	30-APR-2022
WELL - ASR/Blending 5SW	ASR Biscayne wd from ASR 5SW	Monthly	Quarterly	30-APR-2022

Permit Condition No: 15 **Permit Condition Code:** WUPWS004-1

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
South Miami Heights	Raw Water Influent Report for South Miami Heights	Monthly	Quarterly	30-APR-2022
Hialeah/Preston WTP	Raw Water Influent Report for Hialeah/Preston WTP	Monthly	Quarterly	30-APR-2022
Alexander Orr WTP	Raw Water Influent Report for Alexander Orr WTP	Monthly	Quarterly	30-APR-2022
Hialeah RO WTP	Raw Water Influent Report for Hialeah RO WTP	Monthly	Quarterly	30-APR-2022

Exhibit No: 32

Requirement by Permit Condition Report

Permit Condition No: 17 **Permit Condition Code:** WUZZUD001-4

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	Water Conservation Plan Annual Report	Yearly	Yearly	30-APR-2023

Permit Condition No: 18 **Permit Condition Code:** WUPWS009-1

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	Monthly bulk water delivered to North Miami	Monthly	Quarterly	30-APR-2022
PERMIT	Monthly bulk water delivered to Homestead	Monthly	Quarterly	30-APR-2022
PERMIT	Monthly bulk water delivered to North Miami Beach	Monthly	Quarterly	30-APR-2022
PERMIT	Monthly bulk water purchased from Homestead	Monthly	Quarterly	30-APR-2022
PERMIT	Monthly bulk water purchased from North Miami Beach	Monthly	Quarterly	30-APR-2022

Permit Condition No: 20 **Permit Condition Code:** WUPWS003-1

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	Unaccounted for Distribution Losses	Yearly	Yearly	30-APR-2022

Permit Condition No: 23 **Permit Condition Code:** WUWC004-1

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - SMH-F1	Summary of Groundwater Facilities for WELL SMH-F1	One time Only	One time Only	01-JUL-2023
WELL - SMH-F2	Summary of Groundwater Facilities for WELL SMH-F2	One time Only	One time Only	01-JUL-2023
WELL - SMH-F3	Summary of Groundwater Facilities for WELL SMH-F3	One time Only	One time Only	01-JUL-2023
WELL - SMH-F4	Summary of Groundwater Facilities for WELL SMH-F4	One time Only	One time Only	01-JUL-2023
WELL - SMH-F5	Summary of Groundwater Facilities for WELL SMH-F5	One time Only	One time Only	01-JUL-2023
WELL - SMH-F6	Summary of Groundwater Facilities for WELL SMH-F6	One time Only	One time Only	01-JUL-2023
WELL - SMH-F7	Summary of Groundwater Facilities for WELL SMH-F7	One time Only	One time Only	01-JUL-2023
WELL - SMH-F8	Summary of Groundwater Facilities for WELL SMH-F8	One time Only	One time Only	01-JUL-2023
WELL - Cluster 10-1	Summary of Groundwater Facilities for WELL Cluster 10-1	One time Only	One time Only	01-JUL-2023
WELL - Cluster 10-2	Summary of Groundwater Facilities for WELL Cluster 10-2	One time Only	One time Only	01-JUL-2023
WELL - Cluster 10-3	Summary of Groundwater Facilities for WELL Cluster 10-3	One time Only	One time Only	01-JUL-2023
WELL - G-354R	Summary of Groundwater Facilities for WELL G-354R	One time Only	One time Only	01-JUL-2023
WELL - FA-17	Summary of Groundwater Facilities for WELL FA-17	One time Only	One time Only	01-JUL-2023

Permit Condition No: 25 **Permit Condition Code:** WURWF007-2

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	Annual reclaimed water report	Yearly	Yearly	30-APR-2022

Exhibit No: 32

Requirement by Permit Condition Report

Permit Condition No: 26 **Permit Condition Code:** WUZZUD001-4

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	Authorization Request for withdrawals above base condition	One time Only	One time Only	01-SEP-2022

Permit Condition No: 28 **Permit Condition Code:** WUZZUD001-2

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	Authorization for facility to account for deliveries of offset water	One time Only	One time Only	01-SEP-2022
PERMIT	Calibration for facility to account for deliveries of offset water	Every Five Years	Every Five Years	01-SEP-2022

Permit Condition No: 29 **Permit Condition Code:** WUZZUD001-4

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	Offset water use deliveries	Monthly	Monthly	30-SEP-2022

Permit Condition No: 31 **Permit Condition Code:** WUZZUD001-3

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	Updated signed copy of changes made to the Agreement	One time Only	One time Only	30-SEP-2022

Permit Condition No: 32 **Permit Condition Code:** WUZZUD001-2

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	Annual update on progress of C-51 Reservoir	Yearly	Yearly	31-AUG-2022

Permit Condition No: 34 **Permit Condition Code:** WUCOMP010-1

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	Ten-Year Compliance Report for PERMIT	Every Ten Years	Every Ten Years	28-FEB-2032

Permit Condition No: 35 **Permit Condition Code:** WUSLT001-2

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - F-45	Chloride for WELL F-45	Monthly	Quarterly	30-APR-2022
WELL - G-1180	Chloride for WELL G-1180	Monthly	Quarterly	30-APR-2022
WELL - G-1351	Chloride for WELL G-1351	Monthly	Quarterly	30-APR-2022
WELL - G-1354	Chloride for WELL G-1354	Monthly	Quarterly	30-APR-2022
WELL - G-3162	Chloride for WELL G-3162	Monthly	Quarterly	30-APR-2022
WELL - G-3229	Chloride for WELL G-3229	Monthly	Quarterly	30-APR-2022
WELL - G-3250	Chloride for WELL G-3250	Monthly	Quarterly	30-APR-2022
WELL - G-894	Chloride for WELL G-894	Monthly	Quarterly	30-APR-2022
WELL - G-896	Chloride for WELL G-896	Monthly	Quarterly	30-APR-2022
WELL - G-3611	Chloride for WELL G-3611	Monthly	Quarterly	30-APR-2022
WELL - G-3606	Chloride for WELL G-3606	Monthly	Quarterly	30-APR-2022
WELL - G-3313E	Chloride for WELL G-3313E	Yearly	Yearly	31-JAN-2023
WELL - G-3224	Chloride for WELL G-3224	Monthly	Quarterly	30-APR-2022
WELL - G-1009B	Chloride for WELL G-1009B	Monthly	Quarterly	30-APR-2022
WELL - FA-3N NDWWTP	Chloride for WELL FA-3N NDWWTP	Monthly	Quarterly	30-APR-2022
WELL - ASR MW-1 (WEST)	Chloride for WELL ASR MW-1 (WEST)	Monthly	Quarterly	30-APR-2022
WELL - ASR MW-1 (SW)	Chloride for WELL ASR MW-1 (SW)	Monthly	Quarterly	30-APR-2022
WELL - CHI SDWWTP	Chloride for WELL CHI SDWWTP	Monthly	Quarterly	30-APR-2022
WELL - SW-2W	Chloride for WELL SW-2W	Every Four	Every Four	31-MAY-2022

Exhibit No: 32

Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
		months	months	
WELL - G-3313C	Chloride for WELL G-3313C	Monthly	Quarterly	30-APR-2022
WELL - G-939	Chloride for WELL G-939	Monthly	Quarterly	30-APR-2022
WELL - G-901	Chloride for WELL G-901	Monthly	Quarterly	30-APR-2022
WELL - G-571	Chloride for WELL G-571	Monthly	Quarterly	30-APR-2022
WELL - G-548	Chloride for WELL G-548	Monthly	Quarterly	30-APR-2022
WELL - F-279	Chloride for WELL F-279	Monthly	Quarterly	30-APR-2022
WELL - G-3885	Chloride for WELL G-3885	Monthly	Quarterly	30-APR-2022
WELL - G-3886	Chloride for WELL G-3886	Monthly	Quarterly	30-APR-2022
WELL - G-3887	Chloride for WELL G-3887	Monthly	Quarterly	30-APR-2022
WELL - G-3888	Chloride for WELL G-3888	Monthly	Quarterly	30-APR-2022
WELL - G-3947	Chloride for WELL G-3947	Monthly	Quarterly	30-APR-2022
WELL - G-3948	Chloride for WELL G-3948	Monthly	Quarterly	30-APR-2022
WELL - G-3949	Chloride for WELL G-3949	Monthly	Quarterly	30-APR-2022
WELL - SMH-F3	Chloride for WELL SMH-F3	Monthly	Quarterly	30-APR-2022
WELL - G-354R	Chloride for WELL G-354R	Monthly	Quarterly	30-APR-2022
WELL - G-3999	Chloride for WELL G-3999	Monthly	Quarterly	30-APR-2022
WELL - FA-17	Chloride for WELL FA-17	Monthly	Quarterly	30-APR-2022
WELL - G-3966	Chloride for WELL G-3966	Monthly	Quarterly	30-APR-2022
WELL - G-3964	Chloride for WELL G-3964	Monthly	Quarterly	30-APR-2022
WELL - G-3965	Chloride for WELL G-3965	Monthly	Quarterly	30-APR-2022
WELL - G-3968	Chloride for WELL G-3968	Monthly	Quarterly	30-APR-2022
WELL - G-3969	Chloride for WELL G-3969	Monthly	Quarterly	30-APR-2022
WELL - G-3996	Chloride for WELL G-3996	Monthly	Quarterly	30-APR-2022
WELL - G-3997	Chloride for WELL G-3997	Monthly	Quarterly	30-APR-2022
WELL - G-3998	Chloride for WELL G-3998	Monthly	Quarterly	30-APR-2022
WELL - G-5004 (SF17-4)	Chloride for WELL G-5004 (SF17-4)	Monthly	Quarterly	30-APR-2022
WELL - G-5005 (SF18-1)	Chloride for WELL G-5005 (SF18-1)	Monthly	Quarterly	30-APR-2022
WELL - G-5006 (SF18-4)	Chloride for WELL G-5006 (SF18-4)	Monthly	Quarterly	30-APR-2022
WELL - G-5007 (SF18-6)	Chloride for WELL G-5007 (SF18-6)	Monthly	Quarterly	30-APR-2022
WELL - HIA-DZMW-1-S (Hialeah RO WTP)	Chloride for WELL HIA-DZMW-1-S (Hialeah RO WTP)	Monthly	Quarterly	30-APR-2022
WELL - HIA-DZMW-1-D (Hialeah RO WTP)	Chloride for WELL HIA-DZMW-1-D (Hialeah RO WTP)	Monthly	Quarterly	30-APR-2022
WELL - G-3967	Chloride for WELL G-3967	Monthly	Quarterly	30-APR-2022
G-3601-S (replacement well)	Chloride for WELL G-3601-S (replacement well)	Monthly	Quarterly	30-APR-2022
WELL - RO1 Hialeah	Chloride for WELL RO1 Hialeah (use this well instead of RO7 Feb 2014)	Monthly	Quarterly	30-APR-2022
WELL - SMHDZMW-1-S (South Miami Heights)	Chloride for Well SMHDZMW-1-S (South Miami Heights)	Monthly	Quarterly	30-APR-2022
WELL - SMHDZMW-1-D (South Miami Heights)	Chloride for Well SMHDZMW-1-D (South Miami Heights)	Monthly	Quarterly	30-APR-2022

Exhibit No: 32

Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	Annual Water Quality Summary Report	Yearly	Yearly	31-JAN-2023

Permit Condition No: 36 **Permit Condition Code:** WUWLM001-4

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
WELL - G-3913	Ground water level for WELL G-3913	Monthly	Quarterly	30-APR-2022
WELL - G-551	Ground water level for WELL G-551	Monthly	Quarterly	30-APR-2022
WELL - G-1074B	Ground water level for WELL G-1074B	Monthly	Quarterly	30-APR-2022
WELL - G-3555	Ground water level for WELL G-3555	Monthly	Quarterly	30-APR-2022
WELL - G-3563	Ground water level for WELL G-3563	Monthly	Quarterly	30-APR-2022
WELL - G-3565	Ground water level for WELL G-3565	Monthly	Quarterly	30-APR-2022
WELL - AO-6N	Ground water level for WELL AO-6N	Every Four months	Every Four months	31-MAY-2022
WELL - AO-8C	Ground water level for WELL AO-8C	Every Four months	Every Four months	31-MAY-2022
WELL - SC-6N	Ground water level for WELL SC-6N	Every Four months	Every Four months	31-MAY-2022
WELL - SW-7W	Ground water level for WELL SW-7W	Every Four months	Every Four months	31-MAY-2022
WELL - G-3551	Ground water level for WELL G-3551	Monthly	Quarterly	30-APR-2022
WELL - G-3553	Ground water level for WELL G-3553	Monthly	Quarterly	30-APR-2022
WELL - G-3554	Ground water level for WELL G-3554	Monthly	Quarterly	30-APR-2022
WELL - G-3556	Ground water level for WELL G-3556	Monthly	Quarterly	30-APR-2022
WELL - SC-1N	Ground Water Level for Well SC-1N	Every Four months	Every Four months	31-MAY-2022
WELL - G-3611	Ground Water Level for Well G-3611	Monthly	Quarterly	30-APR-2022
WELL - G-3577	Ground water level for WELL G-3577	Monthly	Quarterly	30-APR-2022
WELL - WWF-21S	Ground water level for WELL WWF-21S	Every Four months	Every Four months	31-MAY-2022
WELL - WWF-755	Ground water level for WELL WWF-755	Every Four months	Every Four months	31-MAY-2022
WELL - G-3253	Ground water level for WELL G-3253	Monthly	Quarterly	30-APR-2022
WELL - G-3259A	Ground water level for WELL G-3259A	Monthly	Quarterly	30-APR-2022
WELL - G-3567	Ground water level for WELL G-3567	Monthly	Quarterly	30-APR-2022
WELL - G-3676	Ground water level for WELL G-3676	Monthly	Quarterly	30-APR-2022
WELL - G-3818	Ground water level for WELL G-	Monthly	Quarterly	30-APR-2022

Exhibit No: 32

Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
	3818			
WELL - NW-8D	Ground water level for WELL NW-8D	Every Four months	Every Four months	31-MAY-2022
WELL - NW-6F	Ground water level for WELL NW-6F	Every Four months	Every Four months	31-MAY-2022
WELL - WASD-1C	Ground water level for WELL WASD-1C	Every Four months	Every Four months	31-MAY-2022
WELL - G-3760	Ground water level for WELL G-3760	Monthly	Quarterly	30-APR-2022
WELL - NW-19C	Ground water level for WELL NW-19C	Every Four months	Every Four months	31-MAY-2022
WELL - G-3898	Ground water level for WELL G-3898	Monthly	Quarterly	30-APR-2022
WELL - G-3899	Ground water level for WELL G-3899	Monthly	Quarterly	30-APR-2022
WELL - G-3901	Ground water level for WELL G-3901	Monthly	Quarterly	30-APR-2022
WELL - G-3900	Ground water level for WELL G-3900	Monthly	Quarterly	30-APR-2022
WELL - G-3761	Ground water level for WELL G-3761	Monthly	Quarterly	30-APR-2022
WELL - G-553	Ground water level for WELL G-553	Monthly	Quarterly	30-APR-2022
WELL - SW-2W	Ground water level for WELL SW-2W	Every Four months	Every Four months	31-MAY-2022
WELL - SMH-F3	Ground water level for SMH-F3	Monthly	Quarterly	30-APR-2022
WELL - NW-3AR (replaces NW-3A)	Ground Water Level for Well NW-3AR (replaces NW-3A)	Monthly	Quarterly	30-APR-2022
G-3601-S (replacement well)	Ground Water Level for Well G-3601-S (replacement well)	Monthly	Quarterly	30-APR-2022
PERMIT	Annual Water Level Monitoring Summary Report	Yearly	Yearly	31-MAR-2022

Permit Condition No: 37 **Permit Condition Code:** WUASR001-1

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	ASR Operations Report for PERMIT	Yearly	Yearly	30-APR-2022

Permit Condition No: 51 **Permit Condition Code:** WUZZUD001-2

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	Update Status of Large User Agreement with Hialeah	Quarterly	Quarterly	30-APR-2022

Permit Condition No: 52 **Permit Condition Code:** WUZZUD001-4

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	Annual AWS Update Report	Yearly	Yearly	30-APR-2022

Permit Condition No: 53 **Permit Condition Code:** WUZZUD001-2

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	Annual Wetland Monitoring Report	Yearly	Yearly	30-APR-2023

Permit Condition No: 54 **Permit Condition Code:** WUZZUD001-4

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	Mid Canal Operation monthly flows	Monthly	Quarterly	30-APR-2022

Exhibit No: 32

Requirement by Permit Condition Report

Facility Name	Requirement Name	Col Freq	Sub Freq	Due Date
PERMIT	L30 Canal Operation monthly flows	Monthly	Quarterly	30-APR-2022

Exhibit No: 32

STAFF REPORT DISTRIBUTION LIST

MIAMI-DADE CONSOLIDATED P W S

Application No: 201117-4

Permit No: 13-00017-W

INTERNAL DISTRIBUTION

X John A. Lockwood, P.G.

EXTERNAL DISTRIBUTION

X Permittee - Miami-Dade Water and Sewer Department
X Agent - Miami-Dade Water and Sewer Department
X Owner - Miami-Dade Water and Sewer Department

GOVERNMENT AGENCIES

X Dept of Environmental Protection - West Palm Beach
X Miami-Dade County Engineer Public Works Department

OTHER INTERESTED PARTIES

X Black & Veach Corporation
X Black & Veach Corporation
X Miami-Dade County Asst. Director, Planning
X Miami-Dade County Asst. Director, Water Operations
X Miami-Dade County Chief, Hydrogeology Section
X Miami-Dade County Engineer 3
X Miami-Dade County Modeling Coordinator
X Miami-Dade County Senior Planner
X Miami-Dade County Water Use Efficiency Mgr.
X Natural Resources Defense Council

Exhibit No:33

APPENDIX B

2021 – 2030 Multi-Year Capital Plan

Miami-Dade Water and Sewer Department
ADOPTED 2021-2030 CAPITAL BUDGET AND MULTI-YEAR CAPITAL PLAN
Projection by Project Sub-Project by Year - Water
As of: 9/30/2020

Version 2 - Version 2 Series 2021 Bonds
Active and Future projects

Proj	Sub-Project		Current Bond/Fund Allocation	Expenditures As of 9/30//2020	Remaining Bond/Fund Allocation	PROJECTIONS 2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	2029-2030	Future	Total
1050	101711	HIALEAH/PRESTON WTP - DESIGN AND ENGINEERING ON REDUNDANT 72-INCH WATER MAIN	18,520,232	962,998	17,557,234	7,882,560	9,674,674	0	0	0	0	0	0	0	0	0	17,557,234
	102104	FILTER BACKWASH ELEVATED TANK REPLACEMENT SYSTEM FOR HIALEAH WTP	3,416,779	0	3,416,779	351,215	3,065,564	0	0	0	0	0	0	0	0	0	3,416,779
	102106	HYPOCHLORITE FEED/STORAGE AT PRESTON/HIALEAH WTP	9,539,403	554,178	8,985,225	526,183	4,533,418	3,925,624	0	0	0	0	0	0	0	0	8,985,225
	102127	REPLACEMENT/UPGRADE OF LIME FEED SYSTEM	4,967,243	1,233,443	3,733,800	3,733,800	0	0	0	0	0	0	0	0	0	0	3,733,800
	102134	PURCHASE OF LAKE PROPERTY ADJACENT TO NORTHWEST WELLFIELD	7,603,589	5,993,589	1,610,000	1,610,000	0	0	0	0	0	0	0	0	0	0	1,610,000
	102170	HIALEAH/PRESTON WTP FEEDER/MOTOR EAST & WEST CONTROL CENTER	3,592,332	0	3,592,332	510,660	3,081,672	0	0	0	0	0	0	0	0	0	3,592,332
	102171	HIALEAH/PRESTON WTP TRANSFORMER	1,500,000	0	1,500,000	0	489,208	1,010,792	0	0	0	0	0	0	0	0	1,500,000
	102173	PRESTON WTP HS PUMP ROOM SWITCHGEAR	13,620,098	108,518	13,511,580	782,374	1,615,317	7,740,832	3,373,057	0	0	0	0	0	0	0	13,511,580
		TOTAL - 1050	**62,759,676**	**8,852,726**	**53,906,950**	**15,396,792**	**22,459,853**	**12,677,248**	**3,373,057**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**53,906,950**
1051	101577	ORR WTP - 48" FINISHED WATER LINE (AREA M)	63,970,804	0	63,970,804	0	0	0	0	200,000	300,000	4,811,206	10,818,804	24,902,747	22,938,047	0	63,970,804
	101579	ORR WTP - PUMPING UNIT No. 6 HIGH SERVICE PUMP - EAST PUMP ROOM	12,877,624	7,797,785	5,079,839	4,165,589	914,250	0	0	0	0	0	0	0	0	0	5,079,839
	101882	4 LIME SLAKERS FOR ALEXANDER ORR, JR. WTP	16,606,989	564,356	16,042,633	450,556	5,967,362	7,624,715	2,000,000	0	0	0	0	0	0	0	16,042,633
	101883	ALEXANDER ORR, JR. LIME PLANT REHABILITATION	846,054	391,144	454,910	454,910	0	0	0	0	0	0	0	0	0	0	454,910
	101945	HIGH SERVICE PUMP AND MOTOR IMPROVEMENTS WEST ROOM - VFD	12,903,744	30,184	12,873,560	659,018	1,732,605	9,740,932	741,005	0	0	0	0	0	0	0	12,873,560
	102107	HYPOCHLORITE FEED/STORAGE AT ORR WTP	8,658,449	139,226	8,519,223	584,493	2,870,184	5,046,162	18,384	0	0	0	0	0	0	0	8,519,223
	102167	A. ORR WTP LIME KILN SWITCH GEAR BUILDING AND FEEDERS	8,449,284	1,573,676	6,875,608	3,641,742	2,870,184	363,682	0	0	0	0	0	0	0	0	6,875,608
	102175	ALEXANDER ORR WATER TESTING LABORATORY	8,583,756	679,034	7,904,722	4,759,572	3,043,285	101,865	0	0	0	0	0	0	0	0	7,904,722

Proj	Sub-Project		Current Bond/Fund Allocation	Expenditures As of 9/30//2020	Remaining Bond/Fund Allocation	PROJECTIONS 2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	2029-2030	Future	Total
		TOTAL - 1051	**132,896,704**	**11,175,405**	**121,721,299**	**14,715,880**	**17,397,870**	**22,877,356**	**2,759,389**	**200,000**	**300,000**	**4,811,206**	**10,818,804**	**24,902,747**	**22,938,047**	**0**	**121,721,299**
1053	102116	20-INCH WATER MAIN - BISCAYNE BLVD - AREA L	1,006,056	59,931	946,125	0	0	8,138	551,494	386,493	0	0	0	0	0	0	946,125
	102197	PORT OF MIAMI WATER SUPPLY LINE	26,643,376	22,754,081	3,889,295	2,916,971	972,324	0	0	0	0	0	0	0	0	0	3,889,295
	102227	INSTALL OF 54-INCH WM ALONG RED ROAD (W 4TH AVE), FROM W 21ST ST TO W 53RD ST	49,298,325	673,789	48,624,536	2,277,009	8,595,345	11,789,214	13,962,968	8,000,000	4,000,000	0	0	0	0	0	48,624,536
	103004	REPLACEMENT OF 6,000 LF OF CORRODED 8", 12", 16" WM ALONG NE 36 CT / TURNBERRY WAY FROM WILLIAM LEHMAN	5,610,281	335,122	5,275,159	432,754	1,759,879	2,728,345	354,181	0	0	0	0	0	0	0	5,275,159
		TOTAL - 1053	**82,558,038**	**23,822,923**	**58,735,115**	**5,626,734**	**11,327,548**	**14,525,697**	**14,868,643**	**8,386,493**	**4,000,000**	**0**	**0**	**0**	**0**	**0**	**58,735,115**
1054	101441	54" REPLACEMENT OF LOW PRESSURE WATER MAIN IN NW 62 ST (NW 37 AVE - 10 AVE)	10,710,779	265,636	10,445,143	0	254,069	699,823	1,000,000	4,219,985	4,271,266	0	0	0	0	0	10,445,143
		TOTAL - 1054	**10,710,779**	**265,636**	**10,445,143**	**0**	**254,069**	**699,823**	**1,000,000**	**4,219,985**	**4,271,266**	**0**	**0**	**0**	**0**	**0**	**10,445,143**
1055	102016	VARIOUS WATER TRANSMISSION MAINS (20 AND 24 INCHES)	5,163,420	0	5,163,420	429,328	400,000	3,735,428	148,664	450,000	0	0	0	0	0	0	5,163,420
		TOTAL - 1055	**5,163,420**	**0**	**5,163,420**	**429,328**	**400,000**	**3,735,428**	**148,664**	**450,000**	**0**	**0**	**0**	**0**	**0**	**0**	**5,163,420**
1056	101474	SPECIAL CONSTRUCTION - WATER IMPROVEMENTS - LOCKER ROOMS	2,366,446	666,446	1,700,000	500,000	200,000	200,000	200,000	200,000	200,000	200,000	0	0	0	0	1,700,000
		TOTAL - 1056	**2,366,446**	**666,446**	**1,700,000**	**500,000**	**200,000**	**200,000**	**200,000**	**200,000**	**200,000**	**200,000**	**0**	**0**	**0**	**0**	**1,700,000**
1059	101084	MIAMI SERVICE FACILITY (PHASE 1)	1,064,685	0	1,064,685	0	0	0	0	0	0	0	1,064,685	0	0	0	1,064,685
	101505	SOUTH MAINTENANCE CENTER	23,721,660	395,575	23,326,085	0	0	0	0	0	0	0	23,326,085	0	0	0	23,326,085
	101507	NORTH MAINTENANCE CENTER	10,116,520	0	10,116,520	0	0	0	0	0	0	250,000	9,866,520	0	0	0	10,116,520
	101547	MIAMI SERVICE FACILITY (PHASE 2)	12,210,998	0	12,210,998	0	0	0	0	0	0	9,281,747	2,929,251	0	0	0	12,210,998
	101888	MIAMI GARDENS (CAROL CITY YARD) - MODULAR / STEEL BUILDING	1,300,000	0	1,300,000	0	0	0	0	0	0	135,000	1,165,000	0	0	0	1,300,000
		TOTAL - 1059	**48,413,863**	**395,575**	**48,018,288**	**0**	**0**	**0**	**0**	**0**	**0**	**9,666,747**	**38,351,541**	**0**	**0**	**0**	**48,018,288**
1060	100786	WATER DISTRIBUTION SYSTEM EXTENSION	70,553,171	10,035,995	60,517,176	8,860,107	8,657,069	18,000,000	5,000,000	5,000,000	5,000,000	5,000,000	5,000,000	0	0	0	60,517,176

Proj	Sub-Project		Current Bond/Fund Allocation	Expenditures As of 9/30//2020	Remaining Bond/Fund Allocation	PROJECTIONS 2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	2029-2030	Future	Total
	101734	WATER DISTRIBUTION SYSTEM EXTENSION FOR JPA"s	42,173,247	26,027,247	16,146,000	2,191,000	1,955,000	2,000,000	2,000,000	2,000,000	2,000,000	2,500,000	1,500,000	0	0	0	16,146,000
	102111	12/16 INCH WATER MAINS IN S. MIAMI-DADE AREA E	4,862,026	0	4,862,026	0	0	2,862,026	2,000,000	0	0	0	0	0	0	0	4,862,026
	102140	FURNISH AND INSTALL 48-INCH WATER MAIN IN SW 117 AVE, SW 72 ST, SW 127 AVE FROM SW 68 ST. TO SW 152 ST. (AREA N)	49,153,849	38,935,764	10,218,085	4,627,190	5,057,055	533,839	0	0	0	0	0	0	0	0	10,218,084
		TOTAL - 1060	**166,742,293**	**74,999,006**	**91,743,287**	**15,678,297**	**15,669,124**	**23,395,865**	**9,000,000**	**7,000,000**	**7,000,000**	**7,500,000**	**6,500,000**	**0**	**0**	**0**	**91,743,286**
1063	100789	FIRE HYDRANT INSTALLATION AND RELATED SYSTEM BETTERMENTS	20,253,437	253,437	20,000,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	0	0	0	20,000,000
		TOTAL - 1063	**20,253,437**	**253,437**	**20,000,000**	**2,500,000**	**2,500,000**	**2,500,000**	**2,500,000**	**2,500,000**	**2,500,000**	**2,500,000**	**2,500,000**	**0**	**0**	**0**	**20,000,000**
1064	100790	MISCELLANEOUS TOOLS AND EQUIPMENT	23,908,928	3,993,353	19,915,575	1,543,125	1,372,450	7,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	0	0	0	19,915,575
	101724	HEAVY CONSTRUCTION EQUIPMENT	45,332,418	9,540,078	35,792,340	4,196,406	5,095,934	9,000,000	3,500,000	3,500,000	3,500,000	3,500,000	3,500,000	0	0	0	35,792,340
	101725	VEHICLES/TRANSPORTATION EQUIPMENT	35,879,401	12,127,047	23,752,354	1,127,109	2,625,245	7,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	0	0	0	23,752,354
	102027	AUTOMATED METER READING (AMR)	120,288,814	288,814	120,000,000	1,500,000	2,500,000	2,500,000	2,500,000	2,500,000	2,500,000	3,500,000	102,500,000	0	0	0	120,000,000
		TOTAL - 1064	**225,409,561**	**25,949,292**	**199,460,269**	**8,366,640**	**11,593,629**	**26,000,000**	**10,500,000**	**10,500,000**	**10,500,000**	**11,500,000**	**110,500,000**	**0**	**0**	**0**	**199,460,269**
1066	100792	WATER PLANTS REHABILITATION	79,187,441	12,222,941	66,964,500	9,297,500	15,667,000	9,500,000	6,500,000	6,500,000	6,500,000	6,500,000	6,500,000	0	0	0	66,964,500
	101714	SECURITY PROJECTS	4,270,598	2,937,249	1,333,349	0	1,333,349	0	0	0	0	0	0	0	0	0	1,333,349
		TOTAL - 1066	**83,458,039**	**15,160,190**	**68,297,849**	**9,297,500**	**17,000,349**	**9,500,000**	**6,500,000**	**6,500,000**	**6,500,000**	**6,500,000**	**6,500,000**	**0**	**0**	**0**	**68,297,849**
1067	100793	WATER SYSTEM UPGRADES	190,692,773	13,692,818	176,999,955	23,494,750	21,835,500	31,669,705	20,000,000	20,000,000	20,000,000	20,000,000	20,000,000	0	0	0	176,999,955
		TOTAL - 1067	**190,692,773**	**13,692,818**	**176,999,955**	**23,494,750**	**21,835,500**	**31,669,705**	**20,000,000**	**20,000,000**	**20,000,000**	**20,000,000**	**20,000,000**	**0**	**0**	**0**	**176,999,955**
1075	102135	MIAMI SPRINGS WELLFIELD REHABILITATION - PHASE 1-3	34,868,696	5,838,881	29,029,815	2,063,695	2,569,127	5,943,625	8,215,714	4,237,653	3,500,000	2,500,000	0	0	0	0	29,029,814
	102176	MONITORING WELL INSTALLATION	1,913,383	163,383	1,750,000	750,000	500,000	500,000	0	0	0	0	0	0	0	0	1,750,000
	103026	C-51 Reseviour Water Project	79,000,000	0	79,000,000	0	0	69,000,000	5,000,000	5,000,000	0	0	0	0	0	0	79,000,000
	103029	Cluster 10 New Wellfield	10,000,000	0	10,000,000	0	0	4,000,000	2,500,000	2,500,000	1,000,000	0	0	0	0	0	10,000,000
	103030	Monitoring Wells Phase 2	2,100,000	0	2,100,000	0	700,000	700,000	700,000	0	0	0	0	0	0	0	2,100,000
	103033	SWWF Well 16 Replacement	3,376,075	0	3,376,075	0	328,966	3,018,586	28,523	0	0	0	0	0	0	0	3,376,075

Proj	Sub-Project		Current Bond/Fund Allocation	Expenditures As of 9/30//2020	Remaining Bond/Fund Allocation	PROJECTIONS 2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	2029-2030	Future	Total
		TOTAL - 1075	**131,258,154**	**6,002,264**	**125,255,890**	**2,813,695**	**4,098,093**	**83,162,211**	**16,444,237**	**11,737,653**	**4,500,000**	**2,500,000**	**0**	**0**	**0**	**0**	**125,255,889**
1078	101368	TELEMETERING SYSTEM - WATER	8,339,194	1,103,817	7,235,377	898,300	0	1,337,077	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	0	0	0	7,235,377
		TOTAL - 1078	**8,339,194**	**1,103,817**	**7,235,377**	**898,300**	**0**	**1,337,077**	**1,000,000**	**1,000,000**	**1,000,000**	**1,000,000**	**1,000,000**	**0**	**0**	**0**	**7,235,377**
1080	102182	CONSTRUCTION OF 4 ADDITIONAL WELLS FOR HIALEAH RO WTP	7,982,648	6,172,648	1,810,000	1,300,000	510,000	0	0	0	0	0	0	0	0	0	1,810,000
		TOTAL - 1080	**7,982,648**	**6,172,648**	**1,810,000**	**1,300,000**	**510,000**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1,810,000**
1081	101966	INSTALLATION OF 12-INCH DIWM ON EAST DRIVE FROM NW 36 ST. TO LABARON DR.	13,307,926	11,083,347	2,224,579	1,716,883	507,696	0	0	0	0	0	0	0	0	0	2,224,579
		TOTAL - 1081	**13,307,926**	**11,083,347**	**2,224,579**	**1,716,883**	**507,696**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**2,224,579**
1082	101969	WATER - PIPES AND INFRASTRUCTURE PROJECTS	52,569,028	23,569,028	29,000,000	8,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	0	0	0	29,000,000
	102178	36-INCH WATER MAIN NW 106 STREET	12,246,303	577,891	11,668,412	5,781,203	5,395,376	491,833	0	0	0	0	0	0	0	0	11,668,412
	102179	36-INCH WATER MAIN NW 135 STREET	16,004,405	842,363	15,162,042	6,211,590	6,950,452	2,000,000	0	0	0	0	0	0	0	0	15,162,042
		TOTAL - 1082	**80,819,736**	**24,989,282**	**55,830,454**	**19,992,793**	**15,345,828**	**5,491,833**	**3,000,000**	**3,000,000**	**3,000,000**	**3,000,000**	**3,000,000**	**0**	**0**	**0**	**55,830,454**
1084	101678	SMALL DIAMETER WATER MAINS ENHANCEMENTS PROGRAM	160,959,724	8,979,177	151,980,547	4,793,620	4,664,129	7,522,798	15,000,000	20,000,000	20,000,000	20,000,000	20,000,000	20,000,000	20,000,000	0	151,980,547
	102139	INSTALLATION OF 8-INCH DUCTILE IRON WATER MAIN PHASE I IN SW 147th AVE AND SW 157th AVE BETWEEN SW 288th ST & SW 297th ST	5,861,107	2,849,871	3,011,236	3,011,236	0	0	0	0	0	0	0	0	0	0	3,011,236
	102142	SOUTH MIAMI HEIGHTS AREA WATER MAIN REPLACEMENT & SERVICE CONVERSIONS PROJECT - PHASE B	33,074,827	16,233,484	16,841,343	1,000,000	5,000,000	7,841,343	3,000,000	0	0	0	0	0	0	0	16,841,343
	102143	REPLACE UNDERSIZED WATER MAINS DOUGHNUT HOLE	12,862,368	8,254,394	4,607,974	4,607,974	0	0	0	0	0	0	0	0	0	0	4,607,974
	102193	WATER MASTER PLAN	6,756,802	756,802	6,000,000	0	800,000	2,000,000	2,000,000	1,000,000	200,000	0	0	0	0	0	6,000,000
	102243	WATER COMMERCIAL CORRIDORS ECONOMIC DEVELOPMENT - PHASE 1	96,115,934	2,128,439	93,987,495	4,163,823	7,676,395	9,814,030	10,107,714	12,000,764	13,500,000	17,600,000	11,124,769	8,000,000	0	0	93,987,495

Miami-Dade Water and Sewer Department
ADOPTED 2021-2030 CAPITAL BUDGET AND MULTI-YEAR CAPITAL PLAN
Projection by Project Sub-Project by Year - Water
As of: 9/30/2020

Version 2 - Version 2 Series 2021 Bonds
Active and Future projects

Proj	Sub-Project	Current Bond/Fund Allocation	Expenditures As of 9/30//2020	Remaining Bond/Fund Allocation	PROJECTIONS 2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	2029-2030	Future	Total
103013	CONSUMER LINE RELOCATION PROJECTS	15,000,000	9,376,597	5,623,403	3,254,542	2,368,861	0	0	0	0	0	0	0	0	0	5,623,403
	TOTAL - 1084	**330,630,762**	**48,578,764**	**282,051,998**	**20,831,195**	**20,509,385**	**27,178,171**	**30,107,714**	**33,000,764**	**33,700,000**	**37,600,000**	**31,124,769**	**28,000,000**	**20,000,000**	**0**	**282,051,998**
	GRAND TOTAL	**1,603,763,449**	**273,163,576**	**1,330,599,873**	**143,558,787**	**161,608,944**	**264,950,414**	**121,401,704**	**108,694,895**	**97,471,266**	**106,777,953**	**230,295,114**	**52,902,747**	**42,938,047**	**0**	**1,330,599,871**

Miami-Dade Water and Sewer Department
ADOPTED 2021-2030 CAPITAL BUDGET AND MULTI-YEAR CAPITAL PLAN
Projection by Project Sub-Project by Year - Wastewater
As of: 9/30/2020

Version 2 - Version 2 Series 2021 Bonds
Active and Future projects

Proj	Sub-Project		Current Bond/Fund Allocation	Expenditures As of 9/30//2020	Remaining Bond/Fund Allocation	PROJECTIONS 2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	2029-2030	Future	Total
1002	101947	NDWWTP FA MONITORING WELLS TO MEET FDEP REQ.	3,047,502	1,786,524	1,260,978	1,260,978	0	0	0	0	0	0	0	0	0	0	1,260,978
	102220	NT-3C - NDWWTP - EDB # 3 (Replacement Electrical Bldg.)(WIFIA 2)	120,584,269	926,394	119,657,875	0	778,396	3,918,820	9,797,050	25,613,096	39,550,513	27,500,000	12,500,000	0	0	0	119,657,875
	102221	NDWWTP Effluent Pump Station and Electrical Annex	37,642,831	0	37,642,831	513,072	5,777,743	14,356,630	10,995,386	6,000,000	0	0	0	0	0	0	37,642,831
	103027	NDWWTP Phase 2 FA MON Wells	6,500,000	0	6,500,000	0	500,000	2,500,000	2,500,000	1,000,000	0	0	0	0	0	0	6,500,000
		TOTAL - 1002	**167,774,602**	**2,712,918**	**165,061,684**	**1,774,050**	**7,056,139**	**20,775,450**	**23,292,436**	**32,613,096**	**39,550,513**	**27,500,000**	**12,500,000**	**0**	**0**	**0**	**165,061,684**
1003	101991	CDWWTP STRUVITE CONTROL PROCESS IMPLEMENTATION	8,500,000	0	8,500,000	0	0	0	0	0	0	0	1,985,641	1,385,028	5,129,331	0	8,500,000
	102205	2.21.02 PS 1 SEAWALL AND HARDENING PROJECT (FEMA)	20,590,814	141,010	20,449,804	1,508,363	8,990,753	6,950,688	3,000,000	0	0	0	0	0	0	0	20,449,804
	102206	CD2.22.02 - PS 2 BEAUTIFICATION AND HARDENING CITY OF MIAMI (FEMA)	5,123,434	3,715	5,119,719	605,630	1,836,234	1,000,000	987,714	690,141	0	0	0	0	0	0	5,119,719
	102223	CDWWTP - STORM HARDENING OF NEW HYPOCHLORITE BUILDING. MWH PLANS ALREADY AT 90% READY FOR PERMITTING	6,000,000	0	6,000,000	2,500,000	1,550,000	1,000,000	950,000	0	0	0	0	0	0	0	6,000,000
	102224	CDWWTP - ENCLOSE AND STORM HARDEN OUTDOOR ELECTRICAL SUBSTATIONS 19 AND 20, 19A AND 20A	500,000	0	500,000	0	0	0	0	0	0	0	500,000	0	0	0	500,000
	103016	CT-3C.2 - CDWWTP EDB #3 (REPLACEMENT) (WIFIA 2)	187,145,926	0	187,145,926	1,322,716	1,378,286	1,506,229	15,189,289	25,030,606	53,622,927	45,434,599	39,661,273	4,000,000	0	0	187,145,925
	103024	CT-4 - CDWWTP - New Materials Management Building	10,739,702	0	10,739,702	170,000	572,000	4,591,813	5,405,889	0	0	0	0	0	0	0	10,739,702
		TOTAL - 1003	**238,599,876**	**144,725**	**238,455,151**	**6,106,709**	**14,327,273**	**15,048,730**	**25,532,892**	**25,720,747**	**53,622,927**	**45,434,599**	**42,146,914**	**5,385,028**	**5,129,331**	**0**	**238,455,150**
1006	102102	SDWWTP FA MONITORING WELL REPLACEMENT	10,246,695	746,695	9,500,000	5,300,000	3,500,000	700,000	0	0	0	0	0	0	0	0	9,500,000
		TOTAL - 1006	**10,246,695**	**746,695**	**9,500,000**	**5,300,000**	**3,500,000**	**700,000**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**9,500,000**
1007	101994	SDWWTP STRUVITE CONTROL PROCESS IMPLEMENTATION - 8870	7,500,000	0	7,500,000	0	0	0	0	0	0	0	1,056,765	2,413,235	4,030,000	0	7,500,000
	101995	SDWWTP SUSTAINABILITY CARBON DIOXIDE SEQUESTERING WITH EFFLUENT REUSE - 7880 - (CPCS)	21,677,688	0	21,677,688	0	0	0	0	0	0	0	700,000	16,947,688	4,030,000	0	21,677,688

Proj	Sub-Project		Current Bond/Fund Allocation	Expenditures As of 9/30//2020	Remaining Bond/Fund Allocation	PROJECTIONS 2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	2029-2030	Future	Total
	102184	SDWWTP FOG RECOVERY STATION	34,033,787	984,825	33,048,962	482,830	1,563,857	10,669,042	15,327,234	5,005,999	0	0	0	0	0	0	33,048,962
	102218	SDWWTP - RECONFIGURE 13,200 VOLT DUAL FEEDER SYSTEM TO SUBSTATION 33 AND 34, 31 AND 32, 31A AND 32A, 21 AND 22, 27AND 28, 23 AND 24, 25 AND 26	5,000,000	0	5,000,000	0	0	0	0	0	200,000	300,000	4,500,000	0	0	0	5,000,000
	103034	Biogas CIP	10,200,000	0	10,200,000	0	1,775,000	2,925,000	2,500,000	3,000,000	0	0	0	0	0	0	10,200,000
		TOTAL - 1007	**78,411,475**	**984,825**	**77,426,650**	**482,830**	**3,338,857**	**13,594,042**	**17,827,234**	**8,005,999**	**200,000**	**300,000**	**6,256,765**	**19,360,923**	**8,060,000**	**0**	**77,426,650**
1008	101768	WASD SERVICE AREA WEST OF I-75 AND NORTH OF NW 170 ST. (ADM AREA)	11,329,415	744,103	10,585,312	2,640,571	3,118,108	4,279,923	546,710	0	0	0	0	0	0	0	10,585,312
	101924	INSTALLATION OF A REDUNDANT SEWER FM FROM WEST SIDE OF INTERCOASTAL WATERWAY AT NE 163 ST TO NDWWTP	22,026,514	3,403,849	18,622,665	733,347	868,587	12,955,586	4,065,145	0	0	0	0	0	0	0	18,622,665
	101985	LEHMAN CAUSEWAY	21,524,360	274,908	21,249,452	1,353,590	2,824,613	9,676,501	6,146,270	1,248,478	0	0	0	0	0	0	21,249,452
	102072	NL-1A TO PHASE 1 & 2: 60" FM FROM BISCAYNE BLVD. TO N. MIAMI AVE. Phase 1 & 2	77,571,662	2,171,789	75,399,873	7,845,962	15,545,479	19,583,203	14,449,134	10,376,095	7,600,000	0	0	0	0	0	75,399,873
	102245	OJUS SANITARY SEWER WITHIN THE OJUS URBAN AREA DISTRICT (DIRECTOR)	10,221,527	433,008	9,788,519	3,806,593	5,981,926	0	0	0	0	0	0	0	0	0	9,788,519
	103018	REPLACE 18" DIP FM FROM PS 499 NORTH ON ISLAND BLVD TO PS 471	8,690,718	0	8,690,718	4,825,789	3,864,929	0	0	0	0	0	0	0	0	0	8,690,718
	103031	Snake Creek Transmission	57,044,224	0	57,044,224	0	701,511	2,806,044	5,897,963	9,212,902	17,212,902	13,212,902	8,000,000	0	0	0	57,044,224
	103032	Aventura Transmission Main	17,351,687	0	17,351,687	0	701,511	2,806,044	5,808,602	3,517,812	2,258,812	2,258,906	0	0	0	0	17,351,687
	103036	Force Main Replacement from PS0491 to Manhole on 137 at Collins Ave.	5,001,522	8,954	4,992,568	1,861,045	2,000,000	1,131,523	0	0	0	0	0	0	0	0	4,992,568
		TOTAL - 1008	**230,761,629**	**7,036,611**	**223,725,018**	**23,066,897**	**35,606,664**	**53,238,824**	**36,913,824**	**24,355,287**	**27,071,714**	**15,471,808**	**8,000,000**	**0**	**0**	**0**	**223,725,018**
1009	102200	BISCAYNE BASIN PROJECTS RELATED TO CL-1	25,237,483	17,657,639	7,579,844	2,900,000	3,501,810	1,178,034	0	0	0	0	0	0	0	0	7,579,844
	103035	Septic to Sewer Conversion Project 12,000 Homes-Phase 1	90,000,000	0	90,000,000	0	9,000,000	9,000,000	18,000,000	22,500,000	18,000,000	13,500,000	0	0	0	0	90,000,000
		TOTAL - 1009	**115,237,483**	**17,657,639**	**97,579,844**	**2,900,000**	**12,501,810**	**10,178,034**	**18,000,000**	**22,500,000**	**18,000,000**	**13,500,000**	**0**	**0**	**0**	**0**	**97,579,844**
1010	102208	CD12241 - 4.05 (2) REHAB OF 2.5 MILES OF 54-INCH IN PCCP FM	20,520,688	0	20,520,688	100,000	2,299,302	7,500,000	10,621,386	0	0	0	0	0	0	0	20,520,688

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Active and Future projects

Proj	Sub-Project		Current Bond/Fund Allocation	Expenditures As of 9/30//2020	Remaining Bond/Fund Allocation	PROJECTIONS 2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	2029-2030	Future	Total
		TOTAL - 1010	**20,520,688**	**0**	**20,520,688**	**100,000**	**2,299,302**	**7,500,000**	**10,621,386**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**20,520,688**
1011	100050	REHABILITATION OF SEWER MAINS DUE TO I/I - SECTIONAL LINING	16,422,430	3,946,788	12,475,642	1,247,564	1,247,564	1,247,564	1,247,564	1,247,564	1,247,564	1,247,564	1,247,564	1,247,564	1,247,566	0	12,475,642
	100890	REHABILITATION OF SEWER MAINS DUE TO I/I - CURED-IN-PLACE LINING	59,543,618	19,263,900	40,279,718	4,027,972	4,027,972	4,027,972	4,027,972	4,027,972	4,027,972	4,027,972	4,027,972	4,027,971	4,027,971	0	40,279,718
	102800	Rehabilitation of Sewer Mains - Dig and Replace, (Previously called Collection System I/I Repairs)	60,657,014	20,744,351	39,912,663	4,885,942	3,886,859	3,886,859	3,897,508	3,887,369	3,878,093	3,897,508	3,897,508	3,897,508	3,897,508	0	39,912,662
	103019	Rehabilitation of Sewer Mains - CIPP for WPO	33,902,653	5,876,583	28,026,070	2,802,607	2,802,607	2,802,607	2,802,607	2,802,607	2,802,607	2,802,607	2,802,607	2,802,607	2,802,607	0	28,026,070
	103020	Rehabilitation of Sewer Mains - Basin 1 - All Technologies	7,700,000	0	7,700,000	600,000	800,000	2,100,000	2,100,000	2,100,000	0	0	0	0	0	0	7,700,000
	103028	Rehabilitation of Sewers Mains - Basin 2 - All Technologies	7,900,000	0	7,900,000	0	800,000	800,000	2,100,000	2,100,000	2,100,000	0	0	0	0	0	7,900,000
		TOTAL - 1011	**186,125,715**	**49,831,622**	**136,294,093**	**13,564,085**	**13,565,002**	**14,865,002**	**16,175,651**	**16,165,512**	**14,056,236**	**11,975,651**	**11,975,651**	**11,975,650**	**11,975,652**	**0**	**136,294,092**
1012	100055	SPECIAL CONSTRUCTION - SANITARY SEWER IMPROVEMENTS	2,038,405	38,405	2,000,000	500,000	250,000	250,000	250,000	250,000	250,000	250,000	0	0	0	0	2,000,000
		TOTAL - 1012	**2,038,405**	**38,405**	**2,000,000**	**500,000**	**250,000**	**250,000**	**250,000**	**250,000**	**250,000**	**250,000**	**0**	**0**	**0**	**0**	**2,000,000**
1013	101108	MIAMI SERVICE FACILITY - PHASE 2	21,537,853	164,790	21,373,063	0	0	0	0	0	0	0	0	1,575,000	19,798,063	0	21,373,063
	101461	NORTH MAINTENANCE CENTER	12,174,912	0	12,174,912	0	0	0	0	0	0	0	0	750,000	11,424,912	0	12,174,912
	101506	SOUTH MAINTENANCE CENTER	23,674,085	34,624	23,639,461	0	0	0	0	0	0	0	0	23,639,461	0	0	23,639,461
	101653	11TH STREET DISTRIBUTION FACILITY RENOVATION	3,599,510	0	3,599,510	0	0	0	0	0	0	0	0	0	3,599,510	0	3,599,510
	101654	WESTWOOD LAKES FACILITY ELEVATOR RENOVATION	1,500,000	0	1,500,000	0	0	0	0	0	0	0	0	0	1,500,000	0	1,500,000
	101999	WEST MAINTENANCE CENTER	41,000,000	0	41,000,000	0	0	0	0	0	0	0	0	41,000,000	0	0	41,000,000
	102000	GENERAL MAINTENANCE LAND ACQUISITION - SEWER	3,500,000	0	3,500,000	0	0	0	0	0	0	0	0	750,000	2,750,000	0	3,500,000
	102001	LEJEUNE ROAD OFFICE EXPANSION - PHASE 2	5,000,000	0	5,000,000	0	0	0	0	0	0	0	0	850,000	4,150,000	0	5,000,000
	102030	EMERGENCY PREPAREDNESS/RECOVERY PROJECTS - (CPCS)	9,100,616	0	9,100,616	300,000	300,000	300,000	2,500,000	3,000,000	2,200,616	300,000	200,000	0	0	0	9,100,616

Proj	Sub-Project		Current Bond/Fund Allocation	Expenditures As of 9/30//2020	Remaining Bond/Fund Allocation	PROJECTIONS 2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	2029-2030	Future	Total
	102052	MAINTENANCE & STORAGE BUILDING FOR THE PUMP STATION DIVISION	2,698,547	0	2,698,547	0	0	0	0	0	0	0	0	350,000	2,348,547	0	2,698,547
	103005	SOUTH MIAMI HEIGHTS TRAILER INSTALLATION AND SITE DEVELOPMENT	2,759,184	1,149,938	1,609,246	1,609,246	0	0	0	0	0	0	0	0	0	0	1,609,246
		TOTAL - 1013	**126,544,707**	**1,349,352**	**125,195,355**	**1,909,246**	**300,000**	**300,000**	**2,500,000**	**3,000,000**	**2,200,616**	**300,000**	**200,000**	**68,914,461**	**45,571,032**	**0**	**125,195,355**
1015	101454	PUMP STATION IMPROVEMENT PROGRAM	92,217,519	47,332,754	44,884,765	14,174,519	8,624,110	7,340,918	1,000,000	0	0	0	13,745,218	0	0	0	44,884,765
		TOTAL - 1015	**92,217,519**	**47,332,754**	**44,884,765**	**14,174,519**	**8,624,110**	**7,340,918**	**1,000,000**	**0**	**0**	**0**	**13,745,218**	**0**	**0**	**0**	**44,884,765**
1018	101774	Force Main in Doral 36-Inch Diameter Sanitary Sewer FM: in 107 Avenue - from NW 7 St. to NW 25 Street	12,373,845	727,243	11,646,602	7,170,455	4,476,147	0	0	0	0	0	0	0	0	0	11,646,602
	102034	LAND ACQUISITION FOR WDWWTP (WDWRRF) (WT-1L)	22,167,313	10,167,313	12,000,000	0	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	0	0	0	0	12,000,000
	102194	WASTEWATER MASTER PLAN	6,000,000	0	6,000,000	0	1,000,000	2,000,000	2,000,000	1,000,000	0	0	0	0	0	0	6,000,000
	103023	SDWWTP STORMWATER MASTER PLAN	3,730,000	0	3,730,000	0	600,000	1,000,000	2,130,000	0	0	0	0	0	0	0	3,730,000
		TOTAL - 1018	**44,271,158**	**10,894,556**	**33,376,602**	**7,170,455**	**8,076,147**	**5,000,000**	**6,130,000**	**3,000,000**	**2,000,000**	**2,000,000**	**0**	**0**	**0**	**0**	**33,376,602**
1019	100877	SANITARY SEWER SYSTEM EXTENSION	64,229,985	14,918,233	49,311,752	4,237,845	10,073,907	5,500,000	5,500,000	5,500,000	5,500,000	6,500,000	6,500,000	0	0	0	49,311,752
	101733	SANITARY SEWER SYSTEM EXTENSION FOR JPA"s	7,327,098	2,894,286	4,432,812	2,310,000	2,122,812	0	0	0	0	0	0	0	0	0	4,432,812
		TOTAL - 1019	**71,557,083**	**17,812,519**	**53,744,564**	**6,547,845**	**12,196,719**	**5,500,000**	**5,500,000**	**5,500,000**	**5,500,000**	**6,500,000**	**6,500,000**	**0**	**0**	**0**	**53,744,564**
1021	102164	REPLACEMENT OF CONE VALVES AT PS# 1310	4,048,777	1,586,263	2,462,514	966,167	750,000	746,347	0	0	0	0	0	0	0	0	2,462,514
	102165	REPLACEMENT OF OBSOLETE GENERATORS	6,861,725	0	6,861,725	638,440	688,440	940,270	1,100,000	1,644,575	1,850,000	0	0	0	0	0	6,861,725
	103021	Hardening of 10 Pump Stations (PS 54,112,300,311,348,536,683,1043,1044 , 1310) (FEMA)	16,569,604	0	16,569,604	2,044,886	1,017,679	3,212,099	4,500,000	3,400,940	2,394,000	0	0	0	0	0	16,569,604
		TOTAL - 1021	**27,480,106**	**1,586,263**	**25,893,843**	**3,649,493**	**2,456,119**	**4,898,716**	**5,600,000**	**5,045,515**	**4,244,000**	**0**	**0**	**0**	**0**	**0**	**25,893,843**
1023	100621	TELEMETERING SYSTEM - WASTEWATER	8,052,437	633,137	7,419,300	798,300	500,000	1,121,000	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000	0	0	0	7,419,300

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Proj	Sub-Project		Current Bond/Fund Allocation	Expenditures As of 9/30//2020	Remaining Bond/Fund Allocation	PROJECTIONS 2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	2029-2030	Future	Total
		TOTAL - 1023	**8,052,437**	**633,137**	**7,419,300**	**798,300**	**500,000**	**1,121,000**	**1,000,000**	**1,000,000**	**1,000,000**	**1,000,000**	**1,000,000**	**0**	**0**	**0**	**7,419,300**
1024	100622	WASTEWATER SYSTEM UPGRADES	140,548,185	13,668,435	126,879,750	21,745,250	18,134,500	12,000,000	17,000,000	17,000,000	17,000,000	12,000,000	12,000,000	0	0	0	126,879,750
		TOTAL - 1024	**140,548,185**	**13,668,435**	**126,879,750**	**21,745,250**	**18,134,500**	**12,000,000**	**17,000,000**	**17,000,000**	**17,000,000**	**12,000,000**	**12,000,000**	**0**	**0**	**0**	**126,879,750**
1025	100623	LIFT STATION STRUCTURAL MAINTENANCE & UPGRADES	33,277,395	5,032,126	28,245,269	2,640,969	4,604,300	3,500,000	3,500,000	3,500,000	3,500,000	3,500,000	3,500,000	0	0	0	28,245,269
		TOTAL - 1025	**33,277,395**	**5,032,126**	**28,245,269**	**2,640,969**	**4,604,300**	**3,500,000**	**3,500,000**	**3,500,000**	**3,500,000**	**3,500,000**	**3,500,000**	**0**	**0**	**0**	**28,245,269**
1027	100625	MISCELLANEOUS TOOLS AND EQUIPMENT	20,918,477	4,702,102	16,216,375	1,240,125	976,250	1,000,000	1,000,000	1,000,000	1,000,000	5,000,000	5,000,000	0	0	0	16,216,375
	101729	VEHICLES/TRANSPORTATION EQUIPMENT	65,641,453	22,965,981	42,675,472	3,547,776	3,127,696	6,000,000	6,000,000	6,000,000	6,000,000	6,000,000	6,000,000	0	0	0	42,675,472
	101730	HEAVY CONSTRUCTION EQUIPMENT	51,304,572	15,907,572	35,397,000	7,245,000	4,152,000	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	4,000,000	0	0	0	35,397,000
		TOTAL - 1027	**137,864,502**	**43,575,655**	**94,288,847**	**12,032,901**	**8,255,946**	**11,000,000**	**11,000,000**	**11,000,000**	**11,000,000**	**15,000,000**	**15,000,000**	**0**	**0**	**0**	**94,288,847**
1029	100627	WASTEWATER TREATMENT PLANTS REHABILITATION	120,120,856	27,867,311	92,253,545	20,493,045	17,760,500	9,000,000	9,000,000	9,000,000	9,000,000	9,000,000	9,000,000	0	0	0	92,253,545
	101732	SECURITY PROJECTS	5,242,907	3,772,808	1,470,099	0	1,470,099	0	0	0	0	0	0	0	0	0	1,470,099
		TOTAL - 1029	**125,363,763**	**31,640,119**	**93,723,644**	**20,493,045**	**19,230,599**	**9,000,000**	**9,000,000**	**9,000,000**	**9,000,000**	**9,000,000**	**9,000,000**	**0**	**0**	**0**	**93,723,644**
1032	101885	WWTP - VIDEO SURVEILANCE SYSTEM	4,641,916	0	4,641,916	2,160,180	2,481,736	0	0	0	0	0	0	0	0	0	4,641,916
		TOTAL - 1032	**4,641,916**	**0**	**4,641,916**	**2,160,180**	**2,481,736**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**4,641,916**
1040	101867	CT-2A - CDWWTP - HLD Improvements & Filtration Pilot Test (WIFIA 4 Applicant)	266,422,205	1,978,618	264,443,587	2,810,729	7,323,193	2,068,114	28,929,475	42,721,420	79,729,176	61,446,751	39,414,729	0	0	0	264,443,587
	102006	NT-2C - NDWWTP - HLD Facilities (WIFIA 4 Applicant)	155,658,772	7,370	155,651,402	4,219,871	2,178,618	680,582	26,540,231	42,650,515	32,768,342	25,613,243	21,000,000	0	0	0	155,651,402
	102007	NE-2 - NDWWTP - Municipal Injection Wells (WIFIA 1)	81,091,461	521,522	80,569,939	936,887	27,516,986	33,754,925	10,726,284	7,634,857	0	0	0	0	0	0	80,569,939
	102008	NE-1 - NDWWTP - Municipal Injection Well PS (WIFIA 4 Applicant)	90,779,239	57,933	90,721,306	2,262,180	1,372,398	237,333	11,298,473	37,536,087	16,414,473	14,600,362	7,000,000	0	0	0	90,721,306
	102009	CE-1 - CDWWTP - Municipal Injection Well PS (WIFIA 4 Applicant)	132,719,175	3,400,308	129,318,867	1,238,024	172,239	763,313	16,994,545	33,272,285	35,176,998	27,803,396	13,898,067	0	0	0	129,318,867
	102010	CE-2 - CDWWTP - Municipal Injection Wells (WIFIA 1)	139,266,392	33,273,741	105,992,651	25,922,037	16,806,826	22,678,672	23,391,269	17,193,847	0	0	0	0	0	0	105,992,651

Proj	Sub-Project		Current Bond/Fund Allocation	Expenditures As of 9/30//2020	Remaining Bond/Fund Allocation	PROJECTIONS 2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	2029-2030	Future	Total
	102080	NT-3 - NDWWTP - EDB # 2 (Electrical Bldg. for HLD)(WIFIA 2)	73,765,257	259,977	73,505,280	1,922,477	917,315	295,305	7,285,510	27,728,978	17,507,560	8,596,620	9,251,515	0	0	0	73,505,280
	102096	CDWWTP PUMP STATION FOR CENTRATE WELL (CE-3)	56,250,143	49,987,953	6,262,190	1,326,713	2,000,000	2,935,477	0	0	0	0	0	0	0	0	6,262,190
	102138	OWNERS REPRESENTATIVE SERVICES FOR OOL PROGRAM AND WASTEWATER SYSTEM	55,832,180	5,999,627	49,832,553	8,654,750	8,905,106	7,344,941	4,767,520	4,066,657	4,110,371	2,090,622	9,892,586	0	0	0	49,832,553
	102222	CT-3C.1 - CDWWTP - EDB #2 (HLD) (WIFIA 2)	175,521,310	2,691,223	172,830,087	3,084,238	601,787	298,531	27,303,930	40,232,834	51,266,500	26,980,405	23,061,862	0	0	0	172,830,087
	103006	CDWWTP - Preliminary Site Preparation (CT-2B)	38,144,860	0	38,144,860	1,174,839	694,053	135,037	1,184,818	25,508,193	4,971,379	4,476,541	0	0	0	0	38,144,860
	103007	CT-3B - CDWWTP - O2 Train and Secondary Clarifiers (WIFIA 4 Applicant)	136,482,787	6,861,183	129,621,604	1,904,704	1,379,402	364,628	12,674,474	40,104,629	35,331,616	23,879,050	13,983,101	0	0	0	129,621,604
	103014	NT-2B- NDWWTP - Site Prep & Stormwater (WIFIA 4 Applicant)	35,236,230	11,289	35,224,941	3,145,284	147,203	887,051	22,296,720	7,457,425	1,291,258	0	0	0	0	0	35,224,941
		TOTAL - 1040	**1,437,170,011**	**105,050,744**	**1,332,119,267**	**58,602,733**	**70,015,126**	**72,443,909**	**193,393,249**	**326,107,727**	**278,567,673**	**195,486,990**	**137,501,860**	**0**	**0**	**0**	**1,332,119,267**
1041	103037	Wastewater Infrastructure Replacement Upgrade- GOB	15,000,000	0	15,000,000	0	5,000,000	5,000,000	5,000,000	0	0	0	0	0	0	0	15,000,000
		TOTAL - 1041	**15,000,000**	**0**	**15,000,000**	**0**	**5,000,000**	**5,000,000**	**5,000,000**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**15,000,000**
1042	101967	WASTEWATER - PIPES AND INFRASTRUCTURE PROJECTS	28,111,028	4,111,028	24,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	3,000,000	0	0	0	24,000,000
		TOTAL - 1042	**28,111,028**	**4,111,028**	**24,000,000**	**3,000,000**	**3,000,000**	**3,000,000**	**3,000,000**	**3,000,000**	**3,000,000**	**3,000,000**	**3,000,000**	**0**	**0**	**0**	**24,000,000**
1044	102501	SDWWTP - Oxygen Production	19,514,644	10,116,767	9,397,877	5,508,223	2,886,675	1,002,979	0	0	0	0	0	0	0	0	9,397,877
	102502	SDWWTP - Oxygenation Trains	4,346,107	3,597,958	748,149	748,149	0	0	0	0	0	0	0	0	0	0	748,149
	102503	SDWWTP - Chlorine Building	3,207,628	187,224	3,020,404	1,211,833	1,808,571	0	0	0	0	0	0	0	0	0	3,020,404
	102504	SDWWTP - Effluent Pump Station	36,620,179	12,890,025	23,730,154	12,595,624	6,134,530	4,000,000	1,000,000	0	0	0	0	0	0	0	23,730,154
	102506	SDWWTP - Digesters and Control Buildings	134,360,470	78,538,037	55,822,433	16,535,814	17,278,093	10,514,920	5,527,221	3,966,385	2,000,000	0	0	0	0	0	55,822,433
	102507	SDWWTP - Dewatering Facility	107,299,155	6,405,142	100,894,013	13,567,258	25,343,316	20,983,439	17,500,000	13,500,000	10,000,000	0	0	0	0	0	100,894,013
	102508	SDWWTP - FOG Removal Facility	8,637,863	8,245,471	392,392	355,426	36,966	0	0	0	0	0	0	0	0	0	392,392
	102509	SDWWTP - Odor Control	20,127,623	1,483,518	18,644,105	4,008,395	10,832,690	2,803,020	1,000,000	0	0	0	0	0	0	0	18,644,105
	102510	SDWWTP - General Electrical	13,629,830	1,252,509	12,377,321	5,308,096	6,535,436	231,078	302,711	0	0	0	0	0	0	0	12,377,321
	102511	SDWWTP - Chlorine Contact Chamber Structural	5,651,445	3,879,843	1,771,602	1,771,602	0	0	0	0	0	0	0	0	0	0	1,771,602
	102600	CDWWTP - Electrical Improvements	13,979,687	2,189,958	11,789,729	9,713,278	1,576,451	500,000	0	0	0	0	0	0	0	0	11,789,729

Miami-Dade Water and Sewer Department
ADOPTED 2021-2030 CAPITAL BUDGET AND MULTI-YEAR CAPITAL PLAN
Projection by Project Sub-Project by Year - Wastewater
As of: 9/30/2020

Version 2 - Version 2 Series 2021 Bonds
Active and Future projects

Proj	Sub-Project		Current Bond/Fund Allocation	Expenditures As of 9/30//2020	Remaining Bond/Fund Allocation	PROJECTIONS 2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	2029-2030	Future	Total
	102601	CDWWTP - Building improvements	4,480,038	4,310,855	169,183	169,183	0	0	0	0	0	0	0	0	0	0	169,183
	102602	Headworks Plant 1	19,211,295	17,879,029	1,332,266	1,326,631	5,635	0	0	0	0	0	0	0	0	0	1,332,266
	102603	CDWWTP - Headworks Plant 2	9,823,347	9,373,719	449,628	193,393	256,235	0	0	0	0	0	0	0	0	0	449,628
	102604	CDWWTP - Oxygenation Trains Plant 1	1,799,332	1,233,640	565,692	91,090	474,602	0	0	0	0	0	0	0	0	0	565,692
	102605	CDWWTP - Oxygenation Trains Plant 2	2,684,562	624,890	2,059,672	2,015,360	44,312	0	0	0	0	0	0	0	0	0	2,059,672
	102606	CDWWTP - Secondary Clarifiers Plant 1	13,118,210	136,357	12,981,853	39,770	52,927	147,414	8,414,401	4,277,189	50,152	0	0	0	0	0	12,981,853
	102607	CDWWTP - Secondary Clarifiers Plant 2	16,477,128	4,253,266	12,223,862	3,573,716	5,884,152	2,400,381	365,613	0	0	0	0	0	0	0	12,223,862
	102608	CDWWTP - RS Pump Stations Plant 1	22,527,239	1,288,370	21,238,869	215,366	379,997	3,794,131	8,111,387	6,734,756	2,003,232	0	0	0	0	0	21,238,869
	102609	CDWWTP - RS Pump Stations Plant 2	33,560,040	19,400,952	14,159,088	3,818,621	4,999,301	4,066,187	1,274,979	0	0	0	0	0	0	0	14,159,088
	102610	CDWWTP - Effluent Pump Station	29,312,726	16,460,862	12,851,864	8,851,864	4,000,000	0	0	0	0	0	0	0	0	0	12,851,864
	102613	CDWWTP - Digesters Plant 1	7,833,759	355,616	7,478,143	0	44,957	3,808,680	3,328,860	295,646	0	0	0	0	0	0	7,478,143
	102614	CDWWTP - Digesters Plant 2	121,049,231	64,074,865	56,974,366	8,613,914	10,284,086	20,183,393	11,892,973	6,000,000	0	0	0	0	0	0	56,974,366
	102615	CDWWTP - Dewatering Building	135,440,087	8,067,334	127,372,753	21,159,539	30,219,678	35,211,415	18,782,121	9,500,000	9,517,500	2,982,500	0	0	0	0	127,372,753
	102616	CDWWTP - Chlorination Facilities	25,680,063	22,868,111	2,811,952	754,776	2,057,176	0	0	0	0	0	0	0	0	0	2,811,952
	102618	CDWWTP - Co-Gen Facility	56,558,399	47,116,950	9,441,449	2,614,313	6,613,809	213,327	0	0	0	0	0	0	0	0	9,441,449
	102620	CDWWTP - Pump Station 1	8,790,357	7,324,322	1,466,035	336,948	1,129,087	0	0	0	0	0	0	0	0	0	1,466,035
	102621	CDWWTP - Pump Station 2	9,940,105	7,783,391	2,156,714	2,156,714	0	0	0	0	0	0	0	0	0	0	2,156,714
	102624	CDWWTP -Ventilation Improvements	968,210	563,178	405,032	403,564	1,468	0	0	0	0	0	0	0	0	0	405,032
	102625	CDWWTP - REHABILITATION OF WALKWAYS AND STAIRWAYS	2,442,125	0	2,442,125	171,631	15,530	2,076,599	178,365	0	0	0	0	0	0	0	2,442,125
	102626	CDWWTP - Oxygen Production	75,629,364	32,620,798	43,008,566	27,164,641	9,680,309	4,163,616	2,000,000	0	0	0	0	0	0	0	43,008,566
	102628	CONSENT DECREE PROGRAM MANAGEMENT & CONSTRUCTION MANAGEMENT	78,720,385	13,433,202	65,287,183	16,855,289	19,038,183	13,776,264	7,481,475	5,816,753	1,220,317	735,531	363,371	0	0	0	65,287,183
	102700	NDWWTP - Headworks and Sludge Degritting Transfer	33,359,446	30,841,923	2,517,523	518,035	1,999,488	0	0	0	0	0	0	0	0	0	2,517,523
	102701	NDWWTP - Primary Clarifiers and Odor Control	76,677,655	36,232,952	40,444,703	25,249,891	7,840,260	5,354,552	2,000,000	0	0	0	0	0	0	0	40,444,703
	102703	NDWWTP - Oxygen Production	128,578,533	1,085,017	127,493,516	2,175,614	7,837,582	15,374,515	32,050,447	40,102,219	15,546,860	9,406,279	5,000,000	0	0	0	127,493,516
	102704	NDWWTP - Secondary Clarifiers	33,219,216	13,179,373	20,039,843	9,930,187	7,888,142	2,219,205	2,309	0	0	0	0	0	0	0	20,039,843
	102705	NDWWTP - Disinfection	18,803,393	12,812,428	5,990,965	5,511,052	479,913	0	0	0	0	0	0	0	0	0	5,990,965
	102707	NDWWTP - Plant Wide Electrical	709,879	45,192	664,687	664,687	0	0	0	0	0	0	0	0	0	0	664,687
		TOTAL - 1044	**1,334,768,755**	**502,153,044**	**832,615,711**	**215,899,487**	**193,659,557**	**152,825,115**	**121,212,862**	**90,192,948**	**40,338,061**	**13,124,310**	**5,363,371**	**0**	**0**	**0**	**832,615,711**
1045	102804	South Dade 54 inch PCCP FM Rehabilitation	55,570,376	41,613,911	13,956,465	217,646	10,738,819	3,000,000	0	0	0	0	0	0	0	0	13,956,465

Proj	Sub-Project		Current Bond/Fund Allocation	Expenditures As of 9/30//2020	Remaining Bond/Fund Allocation	PROJECTIONS 2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	2029-2030	Future	Total
	102808	Replace Approximately 25 miles of AC force mains	21,533,735	16,493,251	5,040,484	4,342,891	697,593	0	0	0	0	0	0	0	0	0	5,040,484
	102809	Opa-Locka Airport 48" PCCP force main replacement	19,198,633	16,002,429	3,196,204	141,240	187,799	1,991,949	875,216	0	0	0	0	0	0	0	3,196,204
		TOTAL - 1045	**96,302,744**	**74,109,591**	**22,193,153**	**4,701,777**	**11,624,211**	**4,991,949**	**875,216**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**22,193,153**
1046	102900	DORAL BASIN - UPGRADE SEWAGE PS No. 418	14,041,434	11,075,323	2,966,111	995,906	1,970,205	0	0	0	0	0	0	0	0	0	2,966,111
	102902	Upgrade of PS#0692	18,641,475	16,098,510	2,542,965	2,520,838	22,127	0	0	0	0	0	0	0	0	0	2,542,965
	102903	Replacement of Switchgear PS#0414	8,852,928	8,025,626	827,302	331,042	430,875	19,877	45,509	0	0	0	0	0	0	0	827,303
	102904	Replacement of Switchgear and Rehabilitation of Wet well PS#0415	10,354,299	8,666,304	1,687,995	1,640,848	47,147	0	0	0	0	0	0	0	0	0	1,687,995
	102905	Replacement of Switchgear PS#0416	8,327,372	7,879,754	447,618	380,378	67,240	0	0	0	0	0	0	0	0	0	447,618
	102906	Replacement of Switchgear and Rehabilitation of Wet well PS#0417	9,193,981	7,083,246	2,110,735	1,885,138	225,597	0	0	0	0	0	0	0	0	0	2,110,735
	102908	Replacement of Plumbing and Electrical Equipment at PS#0301	13,153,056	3,468,343	9,684,713	7,713,543	1,817,474	153,696	0	0	0	0	0	0	0	0	9,684,713
	102909	Upgrade of PS#0488	17,715	0	17,715	17,715	0	0	0	0	0	0	0	0	0	0	17,715
	102910	Installation of 60 inch FM from Kendall Dr to PS#0536	6,165,745	1,979,989	4,185,756	469,639	3,716,117	0	0	0	0	0	0	0	0	0	4,185,756
	102911	Replacement of Switchgear at PS#0187	14,340,883	13,405,641	935,242	916,431	18,811	0	0	0	0	0	0	0	0	0	935,242
	102914	Upgrade of PS #0065, 0201, 0334, 0374, 0607	241,827	0	241,827	241,827	0	0	0	0	0	0	0	0	0	0	241,827
	102916	Upgrade of PS #0037, 0351, 0370, 0403	4,999,104	4,467,077	532,027	532,027	0	0	0	0	0	0	0	0	0	0	532,027
	102917	Upgrade of PS #0441, 0491, 0710, 0827, 0852, 1236	7,254,411	6,604,062	650,349	650,349	0	0	0	0	0	0	0	0	0	0	650,349
		TOTAL - 1046	**115,584,230**	**88,753,875**	**26,830,355**	**18,295,681**	**8,315,593**	**173,573**	**45,509**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**26,830,356**
1047	103000	WASTEWATER COMMERCIAL CORRIDORS ECONOMIC DEVELOPMENT - GRAVITY AND FORCE MAINS	100,800,000	8,980,950	91,819,050	12,780,470	14,800,026	25,035,867	20,491,349	18,711,338	0	0	0	0	0	0	91,819,050
	103001	WASTEWATER COMMERCIAL CORRIDORS ECONOMIC DEVELOPMENT - PUMP STATIONS	25,200,000	2,245,238	22,954,762	3,195,117	3,700,007	6,258,967	5,122,837	4,677,835	0	0	0	0	0	0	22,954,763
		TOTAL - 1047	**126,000,000**	**11,226,188**	**114,773,812**	**15,975,587**	**18,500,033**	**31,294,834**	**25,614,186**	**23,389,173**	**0**	**0**	**0**	**0**	**0**	**0**	**114,773,813**

Proj	Sub-Project		Current Bond/Fund Allocation	Expenditures As of 9/30//2020	Remaining Bond/Fund Allocation	PROJECTIONS 2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	2029-2030	Future	Total
1048	101757	CL-1 - Downtown Transmission FM Extension	46,950,989	45,597,289	1,353,700	1,353,700	0	0	0	0	0	0	0	0	0	0	1,353,700
	102055	ST-1B - SDWWTP - Step Feed & Oxygenation Train Rehab(WIFIA 3)	114,775,830	10,416,621	104,359,209	934,804	7,864,383	24,763,648	32,573,980	18,024,454	12,197,940	8,000,000	0	0	0	0	104,359,209
	102056	ST-2A SDWWTP - Headworks and Oxygenation Train(WIFIA 3)	120,594,344	0	120,594,344	1,175,431	30,035,505	35,742,304	20,778,857	15,862,247	12,500,000	4,500,000	0	0	0	0	120,594,344
	102150	SE-2 - SDWWTP - Municipal Injection Wells (WIFIA 1)	38,739,739	28,537,309	10,202,430	8,202,430	2,000,000	0	0	0	0	0	0	0	0	0	10,202,430
	103009	SDWWTP - Chlorine Contact & Wells PS (ST-2C)(WIFIA 3)	80,512,771	9,996,845	70,515,926	689,895	4,357,960	27,723,169	30,532,729	5,107,194	2,104,979	0	0	0	0	0	70,515,926
	103010	SDWWTP - Clarifiers and HLD (ST-2B) (WIFIA 3)	75,998,926	0	75,998,926	875,555	1,953,233	24,500,849	28,138,967	15,530,322	5,000,000	0	0	0	0	0	75,998,926
	103011	SDWWTP - Electrical Building (ST-2D) (WIFIA 2)	210,886,953	7,858,304	203,028,649	1,636,385	4,066,591	27,862,855	37,230,638	43,617,526	37,247,858	33,366,796	18,000,000	0	0	0	203,028,649
	103015	ST- 2E - SDWWTP - RAS Piping(WIFIA 3)	6,243,600	233,914	6,009,686	5,059,324	950,362	0	0	0	0	0	0	0	0	0	6,009,686
		TOTAL - 1048	**694,703,152**	**102,640,282**	**592,062,870**	**19,927,524**	**51,228,034**	**140,592,825**	**149,255,171**	**98,141,743**	**69,050,777**	**45,866,796**	**18,000,000**	**0**	**0**	**0**	**592,062,870**
1049	101816	INSTALLATION OF ODOR CONTROL UNITS AT PUMP STATIONS (VAPE)	1,400,000	0	1,400,000	200,000	200,000	200,000	200,000	200,000	200,000	200,000	0	0	0	0	1,400,000
	101837	REPLACEMENT OF MOTOR CONTROL CENTERS AND SWITCHGEAR AT REGIONAL PUMP STATIONS	11,334,724	334,724	11,000,000	1,800,000	1,200,000	1,200,000	1,200,000	2,200,000	2,200,000	1,200,000	0	0	0	0	11,000,000
	101840	REPLACEMENT OF ANVIC DRIVES AND SWITCHGEAR AT PS#0536	2,102,514	1,536,187	566,327	566,327	0	0	0	0	0	0	0	0	0	0	566,327
	101930	REPLACEMENT OF MECHANICAL EQUIPMENT IN REGIONAL PUMP STATIONS	7,451,753	901,753	6,550,000	1,000,000	1,250,000	1,750,000	1,750,000	800,000	0	0	0	0	0	0	6,550,000
	101934	REPLACEMENT OF VARIABLE REQUENCY DRIVES (VFD)	2,367,442	67,442	2,300,000	900,000	900,000	500,000	0	0	0	0	0	0	0	0	2,300,000
	102042	DORAL BASIN UPGRADE - LOCAL PUMP STATION UPGRADES	16,500,000	0	16,500,000	423,961	423,961	1,815,917	2,000,000	3,000,000	2,500,000	2,200,000	2,000,000	1,492,041	644,120	0	16,500,000
	102045	P.S. 2 BASIN UPGRADE - PHASE 1 LOCAL	12,310,508	410,659	11,899,849	850,000	1,250,000	2,750,000	3,150,000	2,750,000	1,149,849	0	0	0	0	0	11,899,849
	102126	RELOCATION OF 20 PUMP STATIONS	18,445,475	365,475	18,080,000	880,000	600,000	1,150,000	3,450,000	2,450,000	2,450,000	2,450,000	2,450,000	2,200,000	0	0	18,080,000
	102160	CONVERSION OF CAN PUMP STATIONS TO SUBMERSIBLE	20,000,000	176,401	19,823,599	2,148,599	2,750,000	4,250,000	3,250,000	3,475,000	2,950,000	1,000,000	0	0	0	0	19,823,599

Miami-Dade Water and Sewer Department
ADOPTED 2021-2030 CAPITAL BUDGET AND MULTI-YEAR CAPITAL PLAN
Projection by Project Sub-Project by Year - Wastewater
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Active and Future projects

Proj	Sub-Project	Current Bond/Fund Allocation	Expenditures As of 9/30//2020	Remaining Bond/Fund Allocation	PROJECTIONS 2020-2021	2021-2022	2022-2023	2023-2024	2024-2025	2025-2026	2026-2027	2027-2028	2028-2029	2029-2030	Future	Total
102163	PS NO. 0559 - REPLACEMENT OF MECH & ELECTRICAL EQUIPMENT	37,359,827	57,250	37,302,577	892,750	650,000	3,200,000	5,431,609	7,431,609	8,431,609	7,265,000	4,000,000	0	0	0	37,302,577
102192	OUT OF COMPLIANCE PUMP STATIONS	56,384,808	1,079,808	55,305,000	5,405,000	4,750,000	4,005,000	3,975,000	4,400,000	5,400,000	9,370,000	6,000,000	6,000,000	6,000,000	0	55,305,000
102201	PS#0300 - REPLACEMENT OF MECHANICAL & ELECTRICAL EQUIPMENT	23,609,565	212,196	23,397,369	665,000	977,804	3,825,000	8,295,000	6,895,000	2,739,565	0	0	0	0	0	23,397,369
102202	PS# 425 FEMA - REPLACEMENT OF ELECTRICAL AND MECHANICAL EQUIPMENT (previously for PS# 306)	7,000,000	0	7,000,000	200,000	400,000	1,050,000	3,000,000	2,350,000	0	0	0	0	0	0	7,000,000
103022	Pump Station Upgrades due to Aging Infrastructure	49,005,826	26,236	48,979,590	1,044,821	2,696,580	4,760,714	5,114,447	6,760,714	7,760,714	6,710,400	4,710,400	4,710,400	4,710,400	0	48,979,590
	TOTAL - 1049	**265,272,442**	**5,168,131**	**260,104,311**	**16,976,458**	**18,048,345**	**30,456,631**	**40,816,056**	**42,712,323**	**35,781,737**	**30,395,400**	**19,160,400**	**14,402,441**	**11,354,520**	**0**	**260,104,311**
	GRAND TOTAL	**5,974,447,701**	**1,145,891,239**	**4,828,556,462**	**500,496,021**	**556,696,122**	**636,589,552**	**750,055,672**	**771,200,070**	**634,934,254**	**451,605,554**	**324,850,179**	**120,038,503**	**82,090,535**	**0**	**4,828,556,462**

APPENDIX C

Municipal Population and Demand Projections

Exhibit C-1

Water Suppliers for Local Governments

Miami-Dade Water and Sewer Department (WASD) Wholesale Customers	
Municipality	**% Population Served by WASD**
Bal Harbour	100%
Bay Harbour Island	100%
Hialeah	100%
Hialeah Gardens	100%
Homestead	3 MGD Max
Indian Creek	100%
Medley	100%
Miami Beach	100%
North Bay Village	100%
North Miami[2]	25%
North Miami Beach[3]	as needed only
Opa Locka	100%
Surfside	100%
Virginia Gardens	100%
West Miami	100%

Miami-Dade Water and Sewer Department (WASD) Retail Municipal Customers	
Municipality	**% Population Served by WASD**
Aventura[1]	72%
Coral Gables	100%
Cutley Bay	100%
Doral	100%
El Portal	100%
Key Biscayne	100%
Miami	100%
Miami Lakes	100%
Miami Shores[4]	97%
Miami Springs	100%
Palmetto Bay	100%
Pinecrest	100%
South Miami	100%
Sweetwater	100%
Miami Gardens[5]	58%
Unincorporated	See Exhibit C-6

Other Utilities - North Miami Beach (NMB)	
Municipality	**% Population Served by NMB**
Aventura[1]	28%
Golden Beach	100%
Miami Gardens[5]	40%
Sunny Isles	100%
North Miami Beach	100%
Unincorporated	See Exhibit C-6

Other Utilities - North Miami (NM)	
Municipality	**% Population Served by NM**
North Miami[2]	75%
Biscayne Park	100%
Miami Shores[4]	3%
Unincorporated	See Exhibit C-6

Other Utilities - Homestead	
Municipality	**% Population Served by Homestead**
Homestead[6]	96%
Unincorporated	See Exhibit C-6

Other Utilities - Florida City	
Municipality	**% Population Served by Fl City**
Florida City	100%

Note:

[1] Aventura is supplied by WASD(68%), North Miami Beach, and City of Opa Locka (3% of population)

[2] 25% of North Miami's demand is supplied by MDWASD. Seventy percent (75%) is supplied by North Miami

[3] North Miami Beach is supplied by WASD on an as needed basis only

[4] Miami Shores is supplied by WASD and North Miami

[5] Miami Gardens is supplied by WASD, North Miami Beach, and Opa Locka. Opa Locka is a wholesale customer of WASD

[6] 4% of Homestead's population is within WASD's service area

Exhibit C-2
Municipal Per Capita - Water Supplied by Miami-Dade Water and Sewer Department

Retail Municipal Customer	2018 Consumption Per Capita (GPD)
Aventura*	183.62
Coral Gables	167.82
Cutler Bay	68.03
Doral	126.94
El Portal	61.49
Key Biscayne	220.28
Miami	97.54
Miami Gardens*	67.69
Miami Lakes	92.33
Miami Shores*	81.62
Miami Springs	93.79
Palmetto Bay	88.67
Pinecrest	82.91
South Miami	115.40
Sweetwater	62.78

Note:

* Represents the per capita for the area supplied by Miami-Dade WASD

Wholesale Customer	2018 Wholesale Per Capita Consumption (GPD)
Bal Harbour	358.53
Bay Harbor Islands	149.59
Hialeah	76.90
Hialeah Gardens	83.59
Indian Creek Village	4,996.44
Medley	1,229.29
Miami Beach	241.60
North Bay Village	145.41
North Miami*	413.28
Opa-Locka	120.26
Surfside	172.34
Virginia Gardens	117.33
West Miami	133.06

Note:

* Represents the per capita for the area supplied by Miami Dade WASD(25% of total service area population).

Exhibit C-3

WASD Wholesale Customers - Water Service Area Population by Utility Served

			2020	2025	2030	2035	2040
Service Area Bal Harbor	Municipality	Bal Harbor					
	Water By Utility	**WASD**	3,442	3,558	3,675	3,792	3,909
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	**3,442**	**3,558**	**3,675**	**3,792**	**3,909**
Service Area Bay Harbor Islands	Municipality	Bay Harbor Islands					
	Water By Utility	**WASD**	6,398	6,709	7,019	7,330	7,641
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	**6,398**	**6,709**	**7,019**	**7,330**	**7,641**
Service Area Hialeah	Municipality	Hialeah					
	Water By Utility	**WASD**	237,721	243,796	249,870	255,944	262,018
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	**237,721**	**243,796**	**249,870**	**255,944**	**262,018**
	Unincorporated within Hialeah's Service Area						
	Water By Utility	**WASD**	2,553	2,641	2,728	2,816	2,904
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	**2,553**	**2,641**	**2,728**	**2,816**	**2,904**
	Total Hialeah Munical Population		**237,721**	**243,796**	**249,870**	**255,944**	**262,018**
	Total Hialeah Service Area Population		**240,274**	**246,436**	**252,598**	**258,760**	**264,922**
Service Area Hialeah Gardens	Municipality	Hialeah Gardens					
	Water By Utility	**WASD**	23,556	24,265	24,974	25,682	26,391
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	**23,556**	**24,265**	**24,974**	**25,682**	**26,391**
Service Area Indian Creek Village	Municipality	Indian Creek Village					
	Water By Utility	**WASD**	92	96	99	103	106
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	**92**	**96**	**99**	**103**	**106**
Service Area Medley	Municipality	Medley					
	Water By Utility	**WASD**	857	873	888	904	920
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	**857**	**873**	**888**	**904**	**920**
	Municipality	Medley - within WASD's Service Area (Commercial/Industrial area)					
	Water By Utility	**WASD**	0	0	0	1	1
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	**0**	**0**	**0**	**1**	**1**

Exhibit C-3

WASD Wholesale Customers - Water Service Area Population by Utility Served

			2020	2025	2030	2035	2040
	Unincorporated within Medley's Service Area (Commercial/Industria Area)						
	Water By Utility	**WASD**	0	0	0	0	0
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	**0**	**0**	**0**	**0**	**0**
	Total Medley Muni. Pop.		**857**	**873**	**888**	**905**	**921**
	Total Medley Service Area Pop.		**857**	**873**	**888**	**904**	**920**
Service Area Miami Beach	Municipality	Miami Beach					
	Water By Utility	**WASD**	97,563	102,654	107,745	112,836	117,927
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	**97,563**	**102,654**	**107,745**	**112,836**	**117,927**
Service Area North Bay Village	Municipality	North Bay Village					
	Water By Utility	**WASD**	8,079	8,669	9,258	9,848	10,437
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	**8,079**	**8,669**	**9,258**	**9,848**	**10,437**
Service Area Opa Locka	Municipality	Opa Locka					
	Water By Utility	**WASD**	16,631	17,372	18,114	18,855	19,596
		North Miami					
		Homestead					
		Florida City					
		Total	**16,631**	**17,372**	**18,114**	**18,855**	**19,596**
	Municipality	Opa Locka - WASD Service Area					
	Water By Utility	**WASD**	1	1	1	1	1
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	**1**	**1**	**1**	**1**	**1**
	Miami Gardens within Opa Locka Service Area						
	Water By Utility	**WASD**	3,262	3,373	3,483	3,594	3,705
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	**3,262**	**3,373**	**3,483**	**3,594**	**3,705**
	Unincorporated within Opa Locka Service Area						
	Water By Utility	**WASD**	1,094	1,108	1,121	1,135	1,149
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	**1,094**	**1,108**	**1,121**	**1,135**	**1,149**
	Total Opa Locka Muni. Pop		**16,631**	**17,372**	**18,114**	**18,855**	**19,596**
	Total Opa Locka Service Area Pop		**20,987**	**21,853**	**22,719**	**23,585**	**24,451**

Exhibit C-3

WASD Wholesale Customers - Water Service Area Population by Utility Served

			2020	2025	2030	2035	2040
Service Area	Municipality	Surfside					
Surfside	**Water By Utility**	**WASD**	6,262	6,493	6,725	6,956	7,187
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	**6,262**	**6,493**	**6,725**	**6,956**	**7,187**
Service Area	Municipality	Virginia Gardens					
Virginia Gardens	**Water By Utility**	**WASD**	1,989	2,041	2,093	2,145	2,197
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	1,989	2,041	2,093	2,145	2,197
Service Area	Municipality	West Miami					
West Miami	**Water By Utility**	**WASD**	7,256	8,357	9,458	10,559	11,660
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	**7,256**	**8,357**	**9,458**	**10,559**	**11,660**

Note: North Miami and North Miami Beach have a wholesale contract with WASD. See Exhibit C-5-Other Utilities for water service area population in these utilities.

Exhibit C-4

WASD Retail Municipal Customers - Water Service Area Population by Utility Served

		2020	2025	2030	2035	2040
Municipality	Coral Gables					
Water By Utility	**WASD**	51,018	53,109	55,200	57,290	59,381
	North Miami					
	NMB					
	Homestead					
	Florida City					
	Total	**51,018**	**53,109**	**55,200**	**57,290**	**59,381**
Municipality	Cutler Bay					
Water By Utility	**WASD**	44429	44874	45318	45763	46207
	North Miami					
	NMB					
	Homestead					
	Florida City					
	Total	**44,429**	**44,874**	**45,318**	**45,763**	**46,207**
Municipality	Doral					
Water By Utility	**WASD**	62,789	69,407	76,024	82,642	89,260
	North Miami					
	NMB					
	Homestead					
	Outside UDB					
	Total	**62,789**	**69,407**	**76,024**	**82,642**	**89,260**
Municipality	El Portal					
Water By Utility	**WASD**	2,374	2,431	2,487	2,544	2,601
	North Miami					
	NMB					
	Homestead					
	Florida City					
	Total	**2,374**	**2,431**	**2,487**	**2,544**	**2,601**
Municipality	Key Biscayne					
Water By Utility	**WASD**	13,351	13,448	13,546	13,643	13,741
	North Miami					
	NMB					
	Homestead					
	Florida City					
	Total	**13,351**	**13,448**	**13,546**	**13,643**	**13,741**
Municipality	Miami					
Water By Utility	**WASD**	457,001	496,232	535,463	574,694	613,925
	North Miami					
	NMB					
	Homestead					
	Florida City					
	Total	**457,001**	**496,232**	**535,463**	**574,694**	**613,925**

Exhibit C-4

WASD Retail Municipal Customers - Water Service Area Population by Utility Served

		2020	2025	2030	2035	2040
Municipality	Miami Lakes					
Water By Utility	**WASD**	31,808	32,783	33,757	34,732	35,706
	North Miami					
	NMB					
	Homestead					
	Florida City					
	Total	**31,808**	**32,783**	**33,757**	**34,732**	**35,706**
Municipality	Miami Shores					
Water By Utility	**WASD**	11,835	12,070	12,305	12,540	12,774
	NM Water by WASD	333.78	337.50	341.22	344.94	348.66
	NMB					
	Homestead					
	Florida City					
	Total	**12,169**	**12,408**	**12,646**	**12,885**	**13,123**
Municipality	Miami Springs					
Water By Utility	**WASD**	15,069	15,447	15,825	16,203	16,581
	North Miami					
	NMB					
	Homestead					
	Florida City					
	Total	**15,069**	**15,447**	**15,825**	**16,203**	**16,581**
Municipality	Palmetto Bay					
Water By Utility	**WASD**	24,770	25,812	26,855	27,897	28,940
	North Miami					
	NMB					
	Homestead					
	Florida City					
	Total	**24,770**	**25,812**	**26,855**	**27,897**	**28,940**
Municipality	Pinecrest					
Water By Utility	**WASD**	19,698	20,281	20,863	21,446	22,028
	North Miami					
	NMB					
	Homestead					
	Florida City					
	Total	**19,698**	**20,281**	**20,863**	**21,446**	**22,028**

Exhibit C-4

WASD Retail Municipal Customers - Water Service Area Population by Utility Served

		2020	2025	2030	2035	2040
Municipality	South Miami					
Water By Utility	**WASD**	11,826	12,444	13,062	13,679	14,297
	North Miami					
	NMB					
	Homestead					
	Florida City					
	Total	**11,826**	**12,444**	**13,062**	**13,679**	**14,297**
Municipality	Sweetwater					
Water By Utility	**WASD**	26,274	27,692	29,109	30,527	31,944
	North Miami					
	NMB					
	Homestead					
	Florida City					
	Total	**26,274**	**27,692**	**29,109**	**30,527**	**31,944**
Municipality	Aventura					
Water By Utility	**WASD**	28,049	29,068	30,089	31,109	32,129
	North Miami					
	NMB	11,204	11,673	12,141	12,610	13,079
	Homestead					
	Florida City					
	Total	**39,253**	**40,741**	**42,230**	**43,719**	**45,208**
Municipality	Biscayne Park					
Water By Utility	**WASD**					
	North Miami	3,186	3,197	3,251	3,304	3,358
	NMB					
	Homestead					
	Florida City					
	Total	**3,186**	**3,197**	**3,251**	**3,304**	**3,358**
Municipality	Miami Gardens					
Water By Utility	**WASD**	64,730	67,061	69,392	71,723	74,054
	North Miami					
	NMB	46,071	47,671	49,271	50,871	52,471
	Homestead					
	Florida City					
Water by Opa Locka		3,262	3,373	3,483	3,594	3,705
	Total	**114,063**	**118,105**	**122,147**	**126,188**	**130,230**

Exhibit C-4

WASD Retail Municipal Customers - Water Service Area Population by Utility Served

		2020	2025	2030	2035	2040
Municipality	Golden Beach					
Water By Utility	**WASD**					
	North Miami					
	NMB	1,007	1,058	1,110	1,161	1,213
	Homestead					
	Florida City					
	Total	**1,007**	**1,058**	**1,110**	**1,161**	**1,213**
Municipality	Sunny Isles Beach					
Water By Utility	**WASD**					
	North Miami					
	NMB	22,698	24,293	25,887	27,482	29,076
	Homestead					
	Florida City					
	Total	**22,698**	**24,293**	**25,887**	**27,482**	**29,076**

Exhibit C-5

Exhibit C-5 Other Utilities Water Service Area Population Projections

			2020	2025	2030	2035	2040
Service Area Florida City	Municipality	Florida City					
	Water By Utility	**WASD**					
		North Miami					
		NMB					
		Homestead					
		Florida City	13,360	15,789	18,219	20,648	23,078
		Total	**13,360**	**15,789**	**18,219**	**20,648**	**23,078**
	Municipality	Florida City-WASD Service Area					
	Water By Utility	**WASD**	170	255	339	424	508
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	**170**	**255**	**339**	**424**	**508**
	Total Fl City Municipality Pop. within WASD Service Area		**170**	**255**	**339**	**424**	**508**
	Total Florida Service Area Pop.		**13,360**	**15,789**	**18,219**	**20,648**	**23,078**
	Total Florida City Muni. Pop		**13,530**	**16,044**	**18,558**	**21,072**	**23,586**
Service Area Homestead	Municipality	Homestead-Homestead service area					
	Water By Utility	**WASD**					
		North Miami					
		NMB					
		Homestead	67,365	71,689	76,012	80,336	84,659
		Florida City					
		Total	**67,365**	**71,689**	**76,012**	**80,336**	**84,659**
	Municipality	Homestead within WASD service area					
	Water By Utility	**WASD**	2,992	3,454	3,915	4,377	4,839
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	**2,992**	**3,454**	**3,915**	**4,377**	**4,839**
	Municipality	Unincorporated-Homestead Service Area					
	Water By Utility	**WASD**	5,887	6,228	6,570	6,911	7,252
		North Miami					
		NMB					
		Homestead					
		Florida City					
		Total	**5,887**	**6,228**	**6,570**	**6,911**	**7,252**
	Total Homestead Municipal Population		**70,357**	**75,142**	**79,927**	**84,713**	**89,498**
	Total Homestead Service Area Population		**73,252**	**77,917**	**82,582**	**87,247**	**91,911**
Service Area North Miami	Municipality	North Miami					
	Water By Utility	**WASD**	15,085	17,019	18,955	20,887	22,823
		North Miami	46,355	47,503	48,650	49,800	50,947
		NMB					
		Homestead					
		Florida City					
		Total	**61,440**	**64,522**	**67,605**	**70,687**	**73,770**
	Unincorporated within NM Service Area						
	Water By Utility	**WASD**	8,864	9,483	10,100	10,720	11,336
		North Miami	23,673	24,488	25,303	26,117	26,932
		NMB					
		Homestead					
		Florida City					
		Total	**32,537**	**33,970**	**35,403**	**36,837**	**38,268**
	Municipality	Biscayne Park					

Exhibit C-5

Exhibit C-5 Other Utilities Water Service Area Population Projections

			2020	2025	2030	2035	2040
	Water By Utility	**WASD**					
		North Miami	3,186	3,197	3,251	3,304	3,358
		NMB					
		Homestead					
		Florida City					
		Total	**3,186**	**3,197**	**3,251**	**3,304**	**3,358**
	Municipality	Miami Shores					
	Water By Utility	**WASD**					
		North Miami	334	338	341	345	349
		NMB					
		Homestead					
		Florida City					
		Total	**334**	**338**	**341**	**345**	**349**
	Total Muni. Population		**61,440**	**64,522**	**67,605**	**70,687**	**73,770**
	Total NM Service Area		**97,497**	**102,027**	**106,600**	**111,173**	**115,745**
Service Area North Miami Beach	Municipality	North Miami Beach					
	Water By Utility	**WASD**					
		North Miami					
		NMB	46,182	49,228	52,274	55,321	58,367
		Homestead					
		Florida City					
		Total	**46,182**	**49,228**	**52,274**	**55,321**	**58,367**
	Municipality	Aventura					
	Water By Utility	**WASD**					
		North Miami					
		NMB	11,204	11,673	12,141	12,610	13,079
		Homestead					
		Florida City					
		Total	11,204	11,673	12,141	12,610	13,079
	Municipality	Golden Beach					
	Water By Utility	**WASD**					
		North Miami					
		NMB	1,007	1,058	1,110	1,161	1,213
		Homestead					
		Florida City					
		Total	**1,007**	**1,058**	**1,110**	**1,161**	**1,213**
	Municipality	Miami Gardens					
	Water By Utility	**WASD**					
		North Miami					
		NMB	46,071	47,671	49,271	50,871	52,471
		Homestead					
		Florida City					
		Total	**46,071**	**47,671**	**49,271**	**50,871**	**52,471**
	Municipality	Sunny Isles Beach					
	Water By Utility	**WASD**					
		North Miami					
		NMB	22,698	24,293	25,887	27,482	29,076
		Homestead					
		Florida City					
		Total	**22,698**	**24,293**	**25,887**	**27,482**	**29,076**
	Unincorporated within NMB Service Area						
	Water By Utility	**WASD**					
		North Miami					
		NMB	47,798	50,006	52,215	54,423	56,631
		Homestead					
		Florida City					
		Total	**47,798**	**50,006**	**52,215**	**54,423**	**56,631**
	Total NMB Municipal Population		**46,182**	**49,228**	**52,274**	**55,321**	**58,367**

Exhibit C-5

Exhibit C-5 Other Utilities Water Service Area Population Projections

		2020	2025	2030	2035	2040
	Total NMB Service Area Pop.	174,960	183,929	192,899	201,868	210,837

Exhibit C-6

Wholesale Service Area Water Demand Projections

Wholesale Customer	Projection Year	Population*	2018 Gallons Per Capita per Day (GPD)	Projected Water Demand (GPD)	Projected Water Demand (MGD)
Bal Harbour	2020	3,442	358.53	1,234,064	1.23
Bal Harbour	2025	3,558	358.53	1,275,654	1.28
Bal Harbour	2030	3,675	358.53	1,317,602	1.32
Bal Harbour	2035	3,792	358.53	1,359,550	1.36
Bal Harbour	2040	3,909	358.53	1,401,499	1.40
Bay Harbor Islands	2020	6,398	149.59	957,063	0.96
Bay Harbor Islands	2025	6,709	149.59	1,003,585	1.00
Bay Harbor Islands	2030	7,019	149.59	1,049,957	1.05
Bay Harbor Islands	2035	7,330	149.59	1,096,479	1.10
Bay Harbor Islands	2040	7,641	149.59	1,143,001	1.14
Hialeah	2020	240,274	76.90	18,477,968	18.48
Hialeah	2025	246,436	76.90	18,951,849	18.95
Hialeah	2030	252,598	76.90	19,425,730	19.43
Hialeah	2035	258,760	76.90	19,899,610	19.90
Hialeah	2040	264,922	76.90	20,373,491	20.37
Hialeah Gardens	2020	23,556	83.59	1,969,147	1.97
Hialeah Gardens	2025	24,265	83.59	2,028,415	2.03
Hialeah Gardens	2030	24,974	83.59	2,087,684	2.09
Hialeah Gardens	2035	25,682	83.59	2,146,869	2.15
Hialeah Gardens	2040	26,391	83.59	2,206,137	2.21
Indian Creek	2020	92	4,996.44	459,673	0.46
Indian Creek	2025	96	4,996.44	479,658	0.48
Indian Creek	2030	99	4,996.44	494,648	0.49
Indian Creek	2035	103	4,996.44	514,634	0.51
Indian Creek	2040	106	4,996.44	529,623	0.53
Medley	2020	857	1,229.29	1,053,505	1.05
Medley	2025	873	1,229.29	1,073,174	1.07
Medley	2030	888	1,229.29	1,091,613	1.09
Medley	2035	904	1,229.29	1,111,282	1.11
Medley	2040	920	1,229.29	1,130,951	1.13
Miami Beach	2020	97,563	241.60	23,571,516	23.57
Miami Beach	2025	102,654	241.60	24,801,517	24.80
Miami Beach	2030	107,745	241.60	26,031,518	26.03
Miami Beach	2035	112,836	241.60	27,261,519	27.26
Miami Beach	2040	117,927	241.60	28,491,520	28.49
North Bay Village	2020	8,079	145.41	1,174,745	1.17
North Bay Village	2025	8,669	145.41	1,260,535	1.26
North Bay Village	2030	9,258	145.41	1,346,180	1.35
North Bay Village	2035	9,848	145.41	1,431,970	1.43
North Bay Village	2040	10,437	145.41	1,517,615	1.52
North Miami*	2020	29,236	453.57	13,260,663	13.26
North Miami	2025	57,878	453.57	26,251,770	26.25
North Miami	2030	31,980	453.57	14,505,169	14.51
North Miami	2035	33,352	453.57	15,127,421	15.13
North Miami	2040	34,724	453.57	15,749,538	15.75
Opa-Locka	2020	20,987	120.26	2,523,867	2.52
Opa-Locka	2025	21,853	120.26	2,627,980	2.63

Exhibit C-6

Wholesale Service Area Water Demand Projections

Wholesale Customer	Projection Year	Population*	2018 Gallons Per Capita per Day (GPD)	Projected Water Demand (GPD)	Projected Water Demand (MGD)
Opa-Locka	2030	22,719	120.26	2,732,092	2.73
Opa-Locka	2035	23,585	120.26	2,836,205	2.84
Opa-Locka	2040	24,450	120.26	2,940,317	2.94
Surfside	2020	6,262	172.34	1,079,175	1.08
Surfside	2025	6,493	172.34	1,118,985	1.12
Surfside	2030	6,725	172.34	1,158,967	1.16
Surfside	2035	6,956	172.34	1,198,777	1.20
Surfside	2040	7,187	172.34	1,238,586	1.24
Virginia Gardens	2020	1,989	117.33	233,369	0.23
Virginia Gardens	2025	2,041	117.33	239,471	0.24
Virginia Gardens	2030	2,093	117.33	245,572	0.25
Virginia Gardens	2035	2,145	117.33	251,673	0.25
Virginia Gardens	2040	2,197	117.33	257,774	0.26
West Miami	2020	7,256	133.06	965,519	0.97
West Miami	2025	8,357	133.06	1,112,023	1.11
West Miami	2030	9,458	133.06	1,258,528	1.26
West Miami	2035	10,559	133.06	1,405,032	1.41
West Miami	2040	11,660	133.06	1,551,536	1.55

Notes:

*Population represents total service area served.

**Water Demand for North Miami represents the area served by MDWASD only (30% of total service area population).

Exhibit C-7

Retail Municipal Customers Water Demand Projections

Municipality	Projection Year	Total Population	2018 Per Capita (GPD)	Projected Demand (MGD)
Aventura[1]	2020	28,049	183.62	5.15
Aventura	2025	29,068	183.62	5.34
Aventura	2030	30,089	183.62	5.52
Aventura	2035	31,109	183.62	5.71
Aventura	2040	32,129	183.62	5.90
Coral Gables	2020	51,018	167.82	8.56
Coral Gables	2025	53,109	167.82	8.91
Coral Gables	2030	55,200	167.82	9.26
Coral Gables	2035	57,290	167.82	9.61
Coral Gables	2040	59,381	167.82	9.97
Cutler Bay	2020	44,429	68.00	3.02
Cutler Bay	2025	44,874	68.00	3.05
Cutler Bay	2030	45,318	68.00	3.08
Cutler Bay	2035	45,763	68.00	3.11
Cutler Bay	2040	46,207	68.00	3.14
Doral	2020	62,789	126.94	7.97
Doral	2025	69,407	126.94	8.81
Doral	2030	76,024	126.94	9.65
Doral	2035	82,642	126.94	10.49
Doral	2040	89,260	126.94	11.33
El Portal	2020	2,374	61.49	0.15
El Portal	2025	2,431	61.49	0.15
El Portal	2030	2,487	61.49	0.15
El Portal	2035	2,544	61.49	0.16
El Portal	2040	2,601	61.49	0.16
Key Biscayne	2020	13,351	220.28	2.94
Key Biscayne	2025	13,448	220.28	2.96
Key Biscayne	2030	13,546	220.28	2.98
Key Biscayne	2035	13,643	220.28	3.01
Key Biscayne	2040	13,741	220.28	3.03
Miami	2020	457,001	97.54	44.58
Miami	2025	496,232	97.54	48.40
Miami	2030	535,463	97.54	52.23
Miami	2035	574,694	97.54	56.06
Miami	2040	613,925	97.54	59.89
Miami Gardens[2]	2020	64,730	67.69	4.38
Miami Gardens	2025	67,061	67.69	4.54
Miami Gardens	2030	69,392	67.69	4.70
Miami Gardens	2035	71,723	67.69	4.85
Miami Gardens	2040	74,054	67.69	5.01

Miami Lakes	2020	31,808	92.33	2.94
Miami Lakes	2025	32,783	92.33	3.03
Miami Lakes	2030	33,757	92.33	3.12
Miami Lakes	2035	34,732	92.33	3.21
Miami Lakes	2040	35,706	92.33	3.30
Miami Shores	2020	12,169	81.62	0.99
Miami Shores	2025	12,408	81.62	1.01
Miami Shores	2030	12,646	81.62	1.03
Miami Shores	2035	12,885	81.62	1.05
Miami Shores	2040	13,123	81.62	1.07
Miami Springs	2020	15,069	93.79	1.41
Miami Springs	2025	15,447	93.79	1.45
Miami Springs	2030	15,825	93.79	1.48
Miami Springs	2035	16,203	93.79	1.52
Miami Springs	2040	16,581	93.79	1.56
Palmetto Bay	2020	24,770	88.67	2.20
Palmetto Bay	2025	25,812	88.67	2.29
Palmetto Bay	2030	26,855	88.67	2.38
Palmetto Bay	2035	27,897	88.67	2.47
Palmetto Bay	2040	28,940	88.67	2.57
Pinecrest	2020	19,698	82.91	1.63
Pinecrest	2025	20,281	82.91	1.68
Pinecrest	2030	20,863	82.91	1.73
Pinecrest	2035	21,446	82.91	1.78
Pinecrest	2040	22,028	82.91	1.83
South Miami	2020	11,826	115.40	1.36
South Miami	2025	12,444	115.40	1.44
South Miami	2030	13,062	115.40	1.51
South Miami	2035	13,679	115.40	1.58
South Miami	2040	14,297	115.40	1.65
Sweetwater	2020	26,274	62.78	1.65
Sweetwater	2025	27,692	62.78	1.65
Sweetwater	2030	29,109	62.78	1.65
Sweetwater	2035	30,527	62.78	1.65
Sweetwater	2040	31,944	62.78	1.65

Notes:

[1] Water demand projections for Aventura are based on the population served by Miami Dade WASD only.

[2] Water demand projections for Miami Gardens are based on the population served by Miami Dade WASD only.

APPENDIX D

Water Use Efficiency

MEMORANDUM

Agenda Item No. 7(D)

(Second Reading 9-2-08)

TO: Honorable Chairman Bruno A. Barreiro and Members, Board of County Commissioners

DATE: May 20, 2008

FROM: R. A. Cuevas, Jr. County Attorney

SUBJECT: Ordinance relating to Water Use Efficiency Standards

The accompanying ordinance was prepared and placed on the agenda at the request of Prime Sponsor Commissioner Natacha Seijas.

R. A. Cuevas, Jr.
County Attorney

RAC/bw

Memorandum

MIAMI-DADE COUNTY

Date: September 2, 2008

To: Honorable Chairman Bruno A. Barreiro
and Members, Board of County Commissioners

From: George M. Burgess
County Manager

Subject: Ordinance relating to Water Efficiency Standards

The ordinance relating to water efficiency standards will not have a fiscal impact to Miami-Dade County.

There will be an impact to the public for High Efficiency Appliances, which currently have a higher initial cost.

Susanne M. Torriente
Chief Assistant County Manager

fis05108

MEMORANDUM

(Revised)

TO: Honorable Chairman Bruno A. Barreiro and Members, Board of County Commissioners

DATE: September 2, 2008

FROM: R. A. Cuevas, Jr. County Attorney

SUBJECT: Agenda Item No. 7(D)

Please note any items checked.

_____ **"4-Day Rule" ("3-Day Rule" for committees) applicable if raised**

_____ **6 weeks required between first reading and public hearing**

_____ **4 weeks notification to municipal officials required prior to public hearing**

_____ **Decreases revenues or increases expenditures without balancing budget**

_____ **Budget required**

_____ **Statement of fiscal impact required**

_____ **Bid waiver requiring County Manager's written recommendation**

_____ **Ordinance creating a new board requires detailed County Manager's report for public hearing**

_____ **Housekeeping item (no policy decision required)**

_____ **No committee review**

Approved _____ Mayor
Veto _____
Override _____

Agenda Item No. 7(D)
9-2-08

ORDINANCE NO. _____

ORDINANCE RELATING TO WATER USE EFFICIENCY STANDARDS; AMENDING SECTIONS 8-31, 32-84, AND 8A-381 OF THE CODE OF MIAMI-DADE COUNTY, FLORIDA; CHANGING EFFECTIVE DATES TO JANUARY 1, 2009 AND CLARIFYING STANDARDS FOR PLUMBING FIXTURES, FIXTURE FITTINGS AND APPLIANCES; PROVIDING SEVERABILITY; INCLUSION IN CODE AND AN EFFECTIVE DATE

NOW, THEREFORE, BE IT ORDAINED BY THE BOARD OF COUNTY COMMISSIONERS OF MIAMI-DADE COUNTY, FLORIDA:

Section 1. Section 8-31 of the Code of Miami-Dade County is hereby amended to read as follows: [1]

Sec. 8-31. Local Technical Amendments to Florida Building Code

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

604.4 Maximum flow and water consumption.

The maximum water consumption flow rates and quantities for all plumbing fixtures, fixture fittings and appliances shall be in accordance with Table 604.4. Effective [[~~July 1, 2008~~]] >>January 1, 2009,<< permit applications for new residential and commercial structures shall include high efficiency plumbing fixtures, fixture fittings and appliances as provided in Table 604.4. Such high efficiency plumbing fixtures, fixture fittings and appliances shall comply with the specifications >>in Table 604.4 or have received the<< [[~~of~~]] U.S. Environmental Protection Agency (EPA) WaterSense >>Label.<< [[~~Program or the Uniform North American Requirements (UNAR) Guidelines and Specifications.~~]]

1Words Stricken through and/or [[double bracketed]] shall be deleted. Words underscored and/or >>double arrowed<< constitute the amendment proposed. Remaining provisions are now in effect and remain unchanged.

Exceptions:

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

TABLE 604.4

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

PLUMBING FIXTURE OR FIXTURE FITTING	MAXIMUM FLOW RATE [b]
Lavatory, private	[[~~1.0~~]] >>1.5<<gpm at 60 psi
Lavatory, public, (metering)	0.25 gallon per metering cycle
Lavatory, public (other than metering)	0.5 gpm at 60 psi
Shower head [a]	1.5 gpm at 80 psi
Sink faucet	[[~~1.0~~]] >>1.5<< gpm at 60 psi
Urinal	Waterless or 0.5 gallon per flushing cycle
Water closet	1.28 gallons per flushing cycle
Dishwasher (residential)	6.5 gallons per cycle or less (Energy Star/Water Sense Certified) [c]
Dishwasher (commercial	less than 1.2 gallons per rack for fill and dump machines and less than 0.9 gallons per rack for all other types of machines
Under the counter machines	1.0 gallon or less per rack for high-temperature machines and 1.7 gallons per rack for low-temperature machines
Washing machine	Water factor of 8 or lower (Energy Star/Water Sense Certified) [c]

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

a. A hand-held shower spray is a shower head.
b. Consumption tolerances shall be determined from referenced standards.
c. Water factor in gallons per cycle per cubic foot.

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

P2903.2 Maximum flow and water consumption.

The maximum water consumption flow rates and quantities for all plumbing fixtures, fixture fittings and appliances shall be in accordance with Table P2903.2a. Effective [[~~July 1, 2008~~]] >>January 1, 2009,<< permit applications for new residential structures shall include high efficiency plumbing fixtures, fixture fittings and appliances as provided in Table P2903.2a. Such high efficiency plumbing fixtures, fixture fittings and appliances shall comply with the specifications >>in Table P2903.2a or have received the<<of U.S. Environmental Protection Agency (EPA) WaterSense >>Label.<< [[~~Program or the Uniform North American Requirements (UNAR) Guidelines and Specifications~~.]]

TABLE P2903.2a
MAXIMUM FLOW RATES AND CONSUMPTION FOR
PLUMBING FIXTURES, FIXTURE FITTINGS AND APPLIANCES

PLUMBING FIXTURE OR FIXTURE FITTING	PLUMBING FIXTURE OR FIXTURE FITTING MAXIMUM FLOW RATE [b]
Lavatory faucet	[[~~1.0~~]] >>1.5<<gpm at 60 psi
Shower head [a]	1.5 gpm at 80 psi
Sink faucet	[[~~1.0~~]] >>1.5<<gpm at 60 psi
Water closet	1.28 gallons per flushing cycle
Dishwasher (residential)	6.5 gallons per cycle or less (Energy Star/Water Sense Certified) [c]
Washing Machine	Water factor of 8 or lower (Energy Star/Water Sense Certified) [c]

For SI: 1 gallon = 3.785 L, 1 gallon per minute = 3.785 L/m
1 pound per square inch = 6.895 kPa.
a. A handheld shower spray is a showerhead.
b. Consumption tolerances shall be determined from referenced standards.
c. Water factor in gallons per cycle per cubic foot

Section 2. Section 32-84 of the Code of Miami-Dade County, Florida is hereby amended to read as follows:

Sec. 32-84. Water use efficiency standards manual

The Miami-Dade Water and Sewer Department ("MDWASD"), in consultation with the Planning Department and such other applicable county departments and agencies, shall publish a water use efficiency standards manual to achieve maximum water savings in new residential and commercial developments in the incorporated and unincorporated areas of Miami-Dade County. The manual shall be initially published on [[~~July 1, 2008~~]] >>January 1, 2009<< and [[~~shall~~]] >>may<< be updated annually on [[~~July 1~~]] >>January 1<< following approval by the County Commission. Each applicant for water service to a new residential or commercial development in incorporated and unincorporated areas of Miami-Dade County shall include in its application every water use efficiency standard that will be incorporated into the new development. The County or applicable municipality shall review the application for compliance with the manual. In evaluating the application for compliance, the County or applicable municipality will consider the availability of products required to implement the water use efficiency standards. The developer's agreement for water service shall include the water use efficiency standards approved by the County.

Section 3. Section 8A-381 of the County of Miami-Dade County, Florida is hereby amended to read as follows:

Sec. 8A-381. Intent and application.

* * *

(c) The provisions of this article shall apply to multiple unit properties utilizing water services. Effective [[~~July 1, 2008~~]] >>January 1, 2009<<, all permit applications for new multi-family residential developments shall be required to include a submeter for each individual dwelling unit.

Section 4. If any section, subsection, sentence, clause or provision of this ordinance is held invalid, the remainder of this ordinance shall not be affected by such invalidity.

Section 5. It is the intention of the Board of County Commissioners, and it is hereby ordained that the provisions of this ordinance, including any Sunset provision, shall become and be made a part of the Code of Miami-Dade County, Florida. The sections of this ordinance may be renumbered or relettered to accomplish such intention and the word "ordinance" may be changed to "section", "article" or other appropriate word.

Section 6. This ordinance shall become effective ten (10) days after the date of enactment unless vetoed by the Mayor, and if vetoed, shall become effective only upon an override by this Board.

PASSED AND ADOPTED:

Approved by County Attorney as
to form and legal sufficiency.

Prepared by:

Henry N. Gillman

Prime Sponsor: Commissioner Natacha Seijas

Memorandum

MIAMI-DADE COUNTY

Date: May 5, 2009

To: Honorable Chairman Dennis C. Moss
and Members, Board of County Commissioners

Agenda Item No. 7(F)

From: George M. Burgess
County Manager

Subject: Ordinance Revising Chapter 18A of the Code of Miami-Dade County, the Landscape Ordinance.

This Substitute Item #2 differs from the original item as follows:

- **Replaces references to "Xeriscape" landscapes with "Florida Friendly" landscapes as promoted by the State.**
- **Updates the definition of "native" plants.**
- **Keeps the native plants requirement to 30% as provided in the current code. Original item increased the native requirement to 50%.**
- **Requires that 50% of the plant material be low maintenance and drought tolerant.**
- **Revises the definition of mulch and the pertinent criteria in order to reflect Florida Friendly landscapes.**
- **Substitute No. 2 differs from Substitute No. 1 in that it complies with the new rule change regarding substitutes and alternates as provided in Ordinance #09-13 adopted on March 3, 2009.**

Recommendation
It is recommended that the Board of County Commissioners (BCC) adopt the attached ordinance revising the Miami-Dade County Landscape Ordinance to supplement outdoor water conservation measures in accordance with the Miami-Dade Water Use Efficiency Plan adopted pursuant to Resolution No. R-468-06.

Scope
This ordinance is of countywide impact.

Fiscal Impact/Funding Source
The proposed ordinance creates no fiscal impact on Miami-Dade County.

Track Record/Monitor
Not applicable.

Background
On April 25, 2006 the Board adopted Resolution R-468-06 which approves the Miami-Dade Water Use Efficiency Plan (Plan) as a part of a larger effort to improve the management of traditional water supplies while improving the efficiency of the County's current water use. The Plan outlines the County's water efficiency measures and best management practices.

The South Florida Water Management District (District) approved the Plan as a condition of the County's 20-Year Water Use Permit issued on November 15, 2007. During the first year of the Plan, WASD kicked-off its conservation efforts by implementing a series of efficiency projects. It is calculated that the total water use savings from these projects will yield a savings of 20 million gallons a day through 2026, including indoor and outdoor water use.

In addition to the implementation of the Plan, an Advisory Committee was established in 2007 at the request of the Government Operations and Environment Committee Chair with the goal of developing countywide guidelines that address water conservation issues and alternative water supplies to assist the County in meeting the conditions of the 20-Year Water Use Permit.

The Advisory Committee is comprised of several county departments including DERM, GSA, Building, Park and Recreation, Planning and Zoning, Building Compliance, Fire, Public Works, and Water and Sewer. In addition to County staff, the Advisory Committee includes representation from stakeholder groups such as the American Society of Landscape Architects, South Florida Builders Association, Sierra Club, Latin Builders Association, Tropical Audubon Society, Association of Cuban Engineers, South Florida Regional Planning Council, Farm Bureau, South Florida Water Management District and the Greater Miami Chamber of Commerce.

On June 5, 2007, the Advisory Committee summarized its findings and presented them to the BCC. These findings included specific recommendations for indoor and outdoor water conservation measures such as the use of high efficiency plumbing fixtures and the use of Florida Friendly landscape principles and irrigation soil moisture sensors. With regards to landscape irrigation, the Advisory Committee's findings were consistent with the "Landscape Irrigation & Florida-Friendly Design Standards" issued by the Florida Department of Environmental Protection in December 2006.

On February 5, 2008 the BCC adopted Ordinance No. 08-14 establishing indoor water conservation measures. The adopted measures call for the installation of efficient water fixtures, appliances and other water saving measures and equipment in new developments. In order to meet the water conservation goals provided in the Plan, the County must also address outdoor water conservation measures.

The proposed revisions to the attached Landscape Ordinance assist the County in meeting the outdoor water conservation goals specified in the Plan for the duration of the County's 20-Year Water Use Permit. In the development of the proposed revisions to the ordinance, the staff of the Department of Planning and Zoning has been working closely with the membership of the Advisory Committee to address outdoor water conservation issues and alternative water supplies for the development community as well as with the members of the Community Image Advisory Board and its Tree and Landscape Projects Sub-Committees. Consultation with other municipalities was also facilitated through these committees.

The proposed ordinance seeks to address outdoor water conservation measures by amending the countywide Landscape Ordinance (Chapter 18A) in order to revise the required plant material, and update the outdoor irrigation language and criteria.

Section 1 of this ordinance revises the Purpose and Intent section of Chapter 18A in order to add by reference the Florida Friendly landscaping principles.

Section 2 of this ordinance revises the Definitions in order to provide additional definitions including definitions for Florida Friendly and the State's Florida Yards & Neighborhood Program. A definition of the County's newly adopted Street Tree Master Plan is also added to this section.

Section 3 of this ordinance revises the Plans Required section in order to include the location of rain switches and soil moisture sensors on the required plans.

Section 4 of this ordinance amends the Minimum Standards section in order to revise the irrigation, trees, shrubs, mulching and plant quality criteria. More specifically this section:

- Updates and rearranges the irrigation sub-section in order to address the design, operation and maintenance of effective irrigation systems. Efforts are made to minimize free water flow conditions and to maximize the uniformity of the system by considering the emitters type, the head spacing, the sprinkler patterns and the water pressure. The section also requires the use of rain switches such as soil moisture sensors.
- Requires that thirty (30) percent of the required plant material shall be native species. No more than 30% of the required shall be palms.
- Requires that fifty (50) percent instead of the required plant material shall be low maintenance and drought tolerant.
- Requires that eighty (80) percent of the plant material required listed in the Landscape Manual, the Street Tree Master Plan or the University of Florida's Low Maintenance Landscape Plants for South Florida list.
- Requires mulches to be applied and maintained in accordance with Florida Friendly Landscaping.

Section 5 of this ordinance revises the Landscape Plan Review Criteria section in order to provide reference to Florida Friendly landscaping.

This ordinance will be complemented by an ordinance establishing minimum landscaping and irrigation criteria for public rights-of-way.

Alex Muñoz
Assistant County Manager

MEMORANDUM

(Revised)

TO: Honorable Chairman Dennis C. Moss and Members, Board of County Commissioners

DATE: May 5, 2009

FROM: R. A. Cuevas, Jr. County Attorney

SUBJECT: Agenda Item No. 7(F)

Please note any items checked.

____	**"4-Day Rule" ("3-Day Rule" for committees) applicable if raised**
✓	**6 weeks required between first reading and public hearing**
✓	**4 weeks notification to municipal officials required prior to public hearing**
____	**Decreases revenues or increases expenditures without balancing budget**
____	**Budget required**
____	**Statement of fiscal impact required**
____	**Bid waiver requiring County Mayor's written recommendation**
____	**Ordinance creating a new board requires detailed County Manager's report for public hearing**
____	**Housekeeping item (no policy decision required)**
____	**No committee review**

Approved _____ Mayor
Veto _____
Override _____

Agenda Item No. 7(F)
5-5-09

ORDINANCE NO. _____

ORDINANCE REVISING CHAPTER 18A OF THE CODE OF MIAMI-DADE COUNTY, FLORIDA ("CODE"), MIAMI-DADE COUNTY LANDSCAPE ORDINANCE, AMENDING SECTIONS 18A-2 THROUGH 18A-4 AND SECTIONS 18A-6 THROUGH 18A-7, PROVIDING SEVERABILITY, INCLUSION IN THE CODE AND AN EFFECTIVE DATE

BE IT ORDAINED BY THE BOARD OF COUNTY COMMISSIONERS OF MIAMI-DADE COUNTY, FLORIDA:

Section 1. Section 18A-2 of the Code of Miami-Dade County, Florida is hereby amended as follows[1]:

Sec. 18A-2. Purpose and intent.

It is the intent of this chapter to establish minimum landscape standards for Incorporated and Unincorporated Miami-Dade County that enhance, improve and maintain the quality of the landscape, and to:

(A) Promote [[~~xeriscape and~~]] >>Florida Friendly landscaping<< principles through the use of drought-tolerant [[~~landscape~~]] >>plant<< species, grouping of plant material by water requirements, the use of irrigation systems that conserve the use of potable and nonpotable water supplies and restrictions on the amount of lawn areas. >>Florida Friendly landscape principles also promote planting the

[1] Words stricken through and/or [[double bracketed]] shall be deleted. Words underscored and/or >>double arrowed<< constitute the amendment proposed. Remaining provisions are now in effect and remain unchanged.

right plant in the right place and appropriate fertilization and mulching.<<

* * *

Section 2. Section 18A-3 of the Code of Miami-Dade County, Florida is hereby amended as follows:

Sec. 18A-3. Definitions.

The definitions contained in Chapters 24 and 33, Code of Miami-Dade County, Florida, shall apply to this chapter except as otherwise changed herein:

* * *

[[~~(A)~~]] *Accessways:* The maximum width of an accessway through the perimeter landscaped strip to an off-street parking or other vehicular use area shall be determined according to the Public Works Manual, Part I, Standard Details. No more than one (1) two-way accessway shall be permitted or any street frontage up to one hundred (100) lineal feet or no more than two (2) one-way accessways shall be permitted for any street frontage up to one hundred (100) lineal feet, such standards to be applicable to any property under one (1) ownership. Where such ownership involves over one hundred (100) feet of street frontage, one (1) additional two-way or two (2) additional one-way drives may be permitted for each additional one hundred (100) feet of frontage or major fraction thereof. The balance of such street frontage not involved with access ways shall be landscaped in accordance with the provisions of this chapter.

>>*ANSI A300 Standards:* Industry-developed standards of practice for tree care. Acronym for American National Standards Institute.<<

[[~~(B)~~]] *Automatic irrigation system:* An irrigation system with a programmable controller or timing mechanism.

[[~~(C)~~]] *Bonafide agricultural activities:* Land used for the growing of food crops, nurseries for the growing of landscape material, the raising of livestock, horse farms, and other good faith agricultural uses, except any portion of the property not eligible for agricultural exemption.

[[~~(D)~~]] *Buffer, perimeter landscape:* An area of land which is set aside along the perimeter of a parcel of land in which landscaping is required to provide an aesthetic transition between different land

uses and to eliminate or reduce the adverse environmental impact, and incompatible land use impacts.

[[~~(E)~~]] *Caliper:* For trees under four (4) inches in diameter, the trunk diameter measured at a height of six (6) inches above natural grade. For trees four (4) inches and greater in diameter, the trunk diameter measured at twelve (12) inches above natural grade.

[[~~(F)~~]] *Clearance pruning:* Pruning required to avoid damage or danger related to structures, power distribution and property, as defined in the current ANSI A300 Standards.

[[~~(G)~~]] *Colonnade:* A roof or building structure, extending over the sidewalk, open to the street and sidewalk, except for supporting columns or piers.

[[~~(H)~~]] *Common open space:* Area required as open space under Chapter 33 or municipal codes for various zoning districts.

[[~~(I)~~]] *Controlled plant species:* Those plant species listed in the Landscape Manual which tend to become nuisances because of their ability to invade proximal native plant communities or native habitats, but which, if located and cultivated properly may be useful or functional as elements of landscape design.

[[~~(J)~~]] *Diameter at breast height (DBH):* Diameter of a tree's trunk measured at a height four and one-half (4.5) feet above natural grade. In the case of multiple-trunk trees, the DBH shall mean the sum of each trunk's diameter measured at a height of four and one-half (4.5) feet above natural grade.

[[~~(K)~~]] *Differential operation schedule:* A method of scheduling an irrigation system to apply different quantities of water, and/or apply water at different frequencies as appropriate, for different hydrozones.

[[~~(L)~~]] *Dissimilar land uses:* Proximate or directly associated land uses which are contradictory, incongruous, or discordant such as higher intensity residential, commercial or industrial uses located adjacent to lower intensity uses.

[[~~(M)~~]] *Drip line:* An imaginary vertical line extending from the outermost horizontal circumference of a tree's branches to the ground.

[[~~(N)~~]] *Duplex dwelling:* A residence building designed for, or used as the separate homes or residences of two (2) separate and distinct families, but having the appearance of a single family dwelling house. Each individual unit in the duplex shall comply with the definition for a one-family dwelling.

>>*Emitters:* devices which are used to control the discharge of irrigation water from lateral pipes.<<

[[~~(O)~~]] *Existing development:* [[~~Existing development shall~~]] >>Shall<< mean a site with structures that were legally approved through the issuance of a certificate of use and occupancy or a certificate of completion as of the effective date of this chapter.

[[~~(P)~~]] *Energy conservation zone:* A zone located no more than twenty-two (22) feet from a structure in a one hundred eighty (180) degree band from due east of the northeast point of the structure, to due south, to due west of the northwest point of the structure.

>>*Environmentally Endangered Lands:* lands that contain natural forest, wetland or native plant communities, rare and endangered

plants and animals, endemic species, endangered species habitat, a diversity of species, outstanding geologic or other natural features, or land which functions as an integral and sustaining component of an existing ecosystem.<<

[[~~(Q)~~]] *Facultative:* Plants with a similar likelihood of occurring in both wetlands and uplands, which are not recognized indicators of either wetland or upland conditions.

>>*Florida Friendly Landscaping:* practices, materials or actions developed by the Florida Yards & Neighborhood Program that help to preserve Florida's natural resources and protect the environment.

Florida Yards & Neighborhood Program: Is a partnership of the University of Florida/Institute of Food and Agricultural Sciences, Florida's water management districts, the Florida Department of Environmental Protection, the National Estuary Program, the Florida Sea Grant College Program and other agencies, managed locally by the Miami-Dade Cooperative Extension Division of the Consumer Services Department.<<

[[~~(R)~~]] *Forbs:* Herbaceous plants other than grasses.

[[~~(S)~~]] *Geologic feature:* A natural rock or mineral formation.

[[~~(T) Gray water~~]] >>*Graywater*<<*:* That portion of domestic sewage emanating from residential showers, >>residential baths,<< residential bathroom washbasins, or residential clothes washing machines.

[[~~(U)~~]] *Ground cover:* A dense, extensive growth of low-growing plants, other than turfgrass, normally reaching an average maximum height of not more than twenty-four (24) inches at maturity.

[[~~(V)~~]] *Hatrack:* To flat-cut the top of a tree, severing the leader or leaders, or the removal of any branch three (3) inches or greater in diameter at any point other than the branch collar.

[[~~(W)~~]] *Hazard pruning:* The removal of dead, diseased, decayed, or obviously weak branches two (2) inches in diameter or greater.

[[~~(X)~~]] *Heat island:* An unnaturally high temperature [[~~microclimaie~~]] >>microclimate<< resulting from radiation from unshaded impervious surfaces.

[[~~(Y)~~]] *Hedge:* A landscape barrier consisting of a continuous, dense planting of shrubs, not necessarily of the same species.

[[~~(Z)~~]] *Herbaceous plant:* A plant having little or no woody tissue.

[[~~(AA)~~]] *Hydromulch:* A sprayed application of seed, mulch and water.

[[~~(BB)~~]] *Hydrozone:* A zone in which plant material with similar water needs are grouped together.

[[~~(CC)~~]] *Included bark:* Bark that is >>embedded in a crotch between a branch and trunk or between co-dominant stems<< [[~~pushed inside a developing crotch~~]], causing a weakened structure.

[[~~DD)~~]] *Irrigation detail:* A graphic representation depicting the materials to be used and dimensions to be met in the installation of the irrigation system.

[[~~(EE)~~]] *Irrigation plan:* A plan drawn at the same scale as the landscape plan, indicating location and specification of irrigation system components and other relevant information as required by this chapter.

[[~~(FF)~~]] *Irrigation system:* A system of pipes or other conduits designed to transport and distribute water to keep plants in a healthy and vigorous condition.

[[~~(GG)~~]] *Landscape feature:* Trellis, arbor, fountain, pond, garden sculpture, garden lighting, decking, patio, decorative paving, gazebo>>,<< and other similar elements.

[[~~(HH)~~]] *Landscape material:* Plants such as grass, ground cover, forbs, shrubs, vines, hedges, trees and non-living material such as rocks, pebbles, sand, mulch, or pervious decorative paving materials.

[[~~(II)~~]] *Landscape plan:* A plan indicating all landscape areas, stormwater retention/detention areas, areas which qualify to be excluded from maximum permitted lawn area, existing vegetation to be retained, proposed plant material, landscape legend, landscape features, planting specifications, and details, and all other relevant information in compliance with this chapter.

[[~~(JJ)~~]] *Lawn area:* An area planted with lawn grasses.

[[~~(KK)~~]] *Manual irrigation system:* An irrigation system in which control valves and switches are manually operated rather than operated by automatic controls.

[[~~(LL)~~]] *Mixed use:* A mixture of land uses such as provided in Traditional Neighborhood Development (TND), Planned Area Development (PAD), and Planned Development (PD).

[[~~(MM)~~]] *Moisture and rain sensor switches:* Devices which have the ability to switch off an automatic irrigation controller after receiving a predetermined amount of rainfall or moisture content in the soil.

[[~~(NN)~~]] *Mulch:* [[~~Non-living organic materials~~]] >>Materials<< customarily used in landscape design to retard erosion, weed infestation, and retain moisture and for use in planting areas.

[[~~(OO)~~]] *Multifamily residential development:* Any residential development other than attached or detached single family or duplex.

[[~~(PP)~~]] *Multiple single family developments:* Attached and detached single family developments that are planned as a total project and not as a single family unit on a single lot.

[[~~(QQ)~~]] *Native habitat:* An area enhanced or landscaped with an appropriate mix of native tree, shrub and groundcover species that resembles a native plant community or natural forest community in structure and composition or is naturally occurring.

[[~~(RR)~~]] *Native plant species:* Plant species with a geographic distribution indigenous to all or part of Miami-Dade County. Plants which are described as being native to Miami-Dade County in botanical manuals such as, but not limited to, "A Flora of Tropical Florida" by Long and Lakela [[~~and "The Biology of Trees Native to Tropical Florida" by P. B. Tomlinson~~]], are native plant species within the meaning of this definition. Plant species which have been introduced into Miami-Dade County by man are not native plant species.

[[~~(SS)~~]] *Native plant community:* A natural association of plants dominated by one (1) or more prominent native plant species, or a characteristic physical attribute.

[[~~(TT)~~]] *Natural [[~~forest community~~]]* >>*Forest Community*<<*:* All assemblages of vegetation designated as Natural Forest

Communities on the Miami-Dade County Natural Forest Community Maps and approved by the Board of County Commissioners, pursuant to Resolution No. R-1764-84 and further defined in Section 24-[[~~3~~]]>>5<< of the Miami-Dade County Code.

[[~~(UU)~~]] *Net lot area:* For the purpose of this chapter, net lot area shall be the area within lot boundaries of all lands comprising the site. Net lot area shall not include any portion of the abutting dedicated streets, alleys, waterways, canals, lakes or any other such dedications.

[[~~(VV)~~]] *One family dwelling:* A private residence building used or intended to be used as a home or residence in which all living rooms are accessible to each other from within the building and in which the use and management of all sleeping quarters, all appliances for sanitation, cooking, ventilating, heating or lighting are designated for the use of one (1) family only.

[[~~(WW)~~]] *Overhead irrigation system:* A high pressure, high volume irrigation system.

[[~~(XX)~~]] *Planting detail:* A graphic representation of the plant installation depicting the materials to be used and dimensions to be met in the placement of plants and other landscape materials.

[[~~(YY)~~]] *Prohibited plant species:* Those plant species listed in the >>Miami-Dade<< Landscape Manual which are demonstrably detrimental to native plants, native wildlife, ecosystems, or human health, safety, and welfare.

[[~~(ZZ)~~]] *Shrub:* A self-supporting woody perennial plant normally growing to a height of twenty-four (24) inches or greater, characterized by multiple stems and branches continuous from the base.

[[~~(AAA)~~]] *Site plan:* A comprehensive plan drawn to scale indicating appropriate site elevations, roadways, and location of all relevant site improvements including structures, parking, other paved areas, ingress and egress drives, landscaped open space and signage.

[[~~(BBB)~~]] *Specimen tree:* A tree with any individual trunk which has a DBH of eighteen (18) inches or greater, but not including the following:

(1) All trees listed in Section 24-[[~~60~~]]>>49<<(4)(f);

(2) Non-native fruit trees that are cultivated or grown for the specific purpose of producing edible fruit, including, but not limited to, mangos, avocados, or species of citrus;

(3) Non-native species of the genus *Ficus*, and

(4) All multitrunk trees in the palm family, except [[~~Accelorrhaphe~~]]>>*Acoelorrhaphe*<< *wrightii* >>*and Phoenix reclinata*<< which have a minimum overall height of fifteen (15) feet.

[[~~(CCC)~~]] *Spray head:* An irrigation device which applies water to the soil or plant surface by fixed spray or mist nozzles.

>>*Sprinkler Head:* a sprinkler head that provides above ground or overhead irrigation.<<

[[~~(DDD)~~]] *Stabilized lawn area:* An area of ground underlain with structural support in the form of grass pavers or stabilized soil prepared to withstand the load of intended vehicular use, such as automobiles, fire trucks and garbage trucks.

[[~~(EEE)~~]] *Stormwater retention/detention area:* An area designed, built and used for temporary storage of stormwater. For purposes of this chapter, these areas are intended to be permanently exempt from wetland regulations.

>>*Street Tree Master Plan:* A greenprint for Miami-Dade County as adopted by the Board of County Commissioners on March 6, 2007 as may be amended from time to time.<<

[[~~(FFF)~~]] *Tree abuse.* Tree abuse shall include:

(1) Damage inflicted upon any part of a tree, including the root system, by machinery, construction equipment, cambium layer penetration, storage of materials, soil compaction, excavation, chemical application or spillage, or change to the natural grade.

(2) Hatracking.

(3) Girdling or bark removal of more than one-third (1/3) of the tree diameter.

(4) Tears and splitting of limb ends or peeling and stripping of bark resulting from improper pruning techniques not in accordance with the current ANSI A300 Standards.

[[~~(GGG)~~]] *Tree canopy [[~~cover~~]]:* The aerial extent of the branches and foliage of a tree >>as defined by the drip line<<.

[[~~(HHH)~~]] *Temporary irrigation systems:* A system including surface distribution elements (hose, pipe, etc.) which may be easily removed when landscape is established.

[[~~(III)~~]] *Understory:* The complex of woody, fibrous, [[~~and~~]] herbaceous >>and graminoid<< plant species that are typically associated with a natural forest community, native plant community, or native habitat.

[[~~(JJJ)~~]] *Vegetation required to be preserved by law:* Portions of a site, including but not limited to specimen trees, natural forest communities and native vegetation which are clearly delineated on site plans, plats, or recorded restrictions, or in some other legally binding manner that are to be protected from any tree or understory removal or effective destruction and maintained without any development.

[[~~(KKK)~~]] *Vegetation survey:* A drawing provided at the same scale as the landscape plan which includes relevant information as required by this chapter.

[[~~(LLL)~~]] *Vehicular use area:* A hard surface area designed or used for off-street parking and/or an area used for loading, circulation, access, storage, including fire trucks, garbage trucks, or display of motor vehicles.

[[~~(MMM)~~]] *Vine:* A plant with a flexible stem which normally requires support to reach mature form.

Section 3. Section 18A-4 of the Code of Miami-Dade County, Florida is hereby amended as follows:

Sec. 18A-4. Plans required.

* * *

(D) *Irrigation plans.* An irrigation plan shall be submitted if a sprinkler system is required by Chapter 33, or as required in the individual municipalities or where an irrigation system is to be provided regardless of code requirements. Where a landscape plan is required, an irrigation plan shall be submitted concurrently.

(1) For a new one-family or duplex dwelling the irrigation plan may be indicated on a plot plan or a separate drawing prepared by the owner or the owner's agent indicating area(s) to be irrigated, location and specifications of lines and heads and pump specifications.

(2) All other development other than those provided in a subsection (1) above shall:

(a) Be drawn on a base plan at the same scale as landscape plan(s).

(b) Delineate landscape areas, major landscape features, and hydrozones.

(c) Delineate existing and proposed structures, parking areas or other vehicular use areas, access aisles, sidewalks, driveways, the location of utilities and easements, and similar features,

(d) Include water source, design operating pressure and flow rate per zone, total volume required for typical depths of application, and application rate.

(e) Include locations of pipes, controllers, valves, sprinklers, back flow prevention devices>>, <u>rain switches or soil moisture sensors,</u><< and electrical supply.

(f) Irrigation details.

<u>Section 4.</u> Section 18A-6 of the Code of Miami-Dade County, Florida is hereby amended as follows:

Sec. 18A-6. Minimum standards.

The following standards shall be considered minimum requirements unless otherwise indicated:

* * *

(B) *Irrigation.*

(1) All newly-planted and relocated plant material shall be watered by temporary or permanent irrigation systems until such time as they are established >>and subsequently on as needed basis to prevent stress and die off in compliance with existing water use restrictions<<.

(2) Irrigation shall be prohibited within native plant communities and natural forest communities, except for temporary systems needed to establish newly planted material. Temporary irrigation systems shall be disconnected immediately after establishment of plant communities.

[[~~(3) Irrigation systems shall be designed to]] conserve water by allowing differential operation schedules based on hydrozone.~~

~~(4) Irrigation systems shall be designed, operated, and maintained to not overthrow or overflow on to impervious surfaces.~~

~~(5) Low trajectory spray heads, and/or low volume water distributing or application devices, shall be used. Overhead irrigation systems shall only be permitted in bonafide agricultural activity areas.~~

~~(6) Gray water shall be used where approved systems are available.~~

~~(7) During dry periods, irrigation application rates of between one (1) and one and one-half (1 1/2) inches per week are recommended for turf areas.~~

~~(8) A moisture or rain sensor device shall be required on all irrigation systems equipped with automatic controls.~~

~~(9) Irrigation systems shall be timed to operate only during hours and on days permitted under Chapter 32 of the Code.~~

~~(10) If an irrigation system is not provided, a hose bib shall be provided within seventy-five (75) feet of any landscape area.~~]]

>>(3) Irrigation systems shall be designed, operated and maintained to:

(a) Meet the needs of all the plants in the landscape.

(b) Conserve water by allowing differential operation schedules based on hydrozone.

(c) Consider soil, slope and other site characteristics in order to minimize water waste, including overspray or overflow on to impervious surfaces and other non-vegetated areas, and off-site runoff.

(d) Minimize free flow conditions in case of damage or other mechanical failure.

(e) Use low trajectory spray heads, and/or low volume water distributing or application devices.

(f) Maximize uniformity, considering factors such as:

(1) Emitters types,

(2) Head Spacing,

(3) Sprinkler pattern, and

(4) Water pressure at the emitter.

(g) Use the lowest quality water feasible (graywater shall be used where approved systems are available).

(h) Rain switches or other devices, such as soil moisture sensors, shall be used with automatic controls.

Operate only during hours and on days permitted under Chapter 32 of the Code of Miami-Dade County.

(i) Where feasible, drip irrigation or micro-sprinklers shall be used.

(4) During dry periods, irrigation application rates of between one (1) and one and one-half (1 1/2) inches per week are recommended for turf areas.

(5) If an irrigation system is not provided, a hose bib shall be provided within seventy-five (75) feet of any landscape area.<<

(C) *Trees.*

(1) *Tree size.* All trees, except street trees [[~~and trees located beneath power lines~~]], shall be a minimum of ten (10) feet high and have a minimum caliper of two (2) inches at time of planting except that thirty (30) percent of the tree requirement may be met by native species with a minimum height of eight (8) feet and a minimum caliper of one and one-half (1 1/2) inches at time of planting.

* * *

(11) [[~~Thirty (30)~~]] [[~~>>Fifty (50)<<~~]] [[~~percent of the required trees and/or palms shall be native species.~~]] >>Of the required trees at least:
(a) Thirty (30) percent shall be native species; and
(b) Fifty (50) percent shall be low maintenance and drought tolerant; and
(c) No more than thirty (30) percent shall be palms.<<

>>(12) Eighty (80) percent of the trees shall be listed in the Miami-Dade Landscape Manual, the Miami-Dade Street Tree Master Plan and/or the University of Florida's Low-Maintenance Landscape Plants for South Florida list.<<

[[~~(12)~~]] >>(13)<< In order to prevent adverse environmental impacts to existing native plant communities, [[~~only existing Sabal Palmettos (Cabbage Palms)~~]] >>cabbage palms (Sabal palmetto) that are harvested from the wild shall not be used to satisfy minimum landscaping requirements.<< [[~~shall be used to satisfy minimum tree and native plant requirements, except that~~]] >>Only existing cabbage palms,<< [[~~Cabbage Palms~~]] which are rescued from government approved donor sites, transplanted within the site, or commercially grown from seed shall be counted towards the minimum tree and native plant requirements.

[[~~(13)~~]] >>(14)<< When trees are planted within the right-of-way, the owners of land adjacent to the areas where street trees are planted must maintain those areas including the trees, plants and sod, using pruning methods specified in this Code. A covenant executed by those owners is required, or a special taxing district must be created to maintain these areas. Where the State, County or municipality determines that the planting of trees and other landscape material is not appropriate in the public right-of-way, they may require that said trees and landscape material be placed on private property.

[[~~(14)~~]] >>(15)<< Consideration shall be given to the selection of trees, plants and planting site to avoid serious problems such as clogged sewers, cracked sidewalks, and power service interruptions.

[[~~(15)~~]] >>(16)<< Municipalities shall meet all the above requirements in the corresponding zoning districts or land use categories of the particular municipality.

(D) *Shrubs.*

(1) All shrubs shall be a minimum of eighteen (18) inches in height when measured immediately after planting. Shrubs shall be provided at ratio of ten (10) per required tree. [[~~Thirty (30)~~]] [[~~>>Fifty (50)<<~~]] [[~~percent of the shrubs shall be native species.~~]] >>Of the provided shrubs at least:
(a) Thirty (30) percent shall be native species; and
(b) Fifty (50) percent shall be low maintenance and drought tolerant; and
(c) Eighty (80) percent shall be listed in the Miami-Dade Landscape Manual, the Miami-Dade Street Tree Master Plan and/or the University of Florida's Low-Maintenance Landscape Plants for South Florida list.<<

(2) When used as a visual screen, buffer, or hedge, shrubs shall be planted at a maximum average spacing of thirty (30) inches on center or if planted at a minimum height of thirty-six (36) inches, shall

have a maximum average spacing of forty-eight (48) inches on center and shall be maintained so as to form a continuous, unbroken and solid visual screen within one (1) year after time of planting. Shrubs used as a buffer, visual screen, or hedge need not be of the same species.

* * *

(G) *Mulch.*

(1) [[~~Weed-free mulch~~]] [[~~Environmentally friendly organic mulches~~]] >>Mulches<< shall be applied and maintained in [[~~a minimum three (3) inch layer under and around all trees and shrubs, and in a minimum two (2) inch layer under and around all ground cover~~]] >>accordance with the most recent edition of the Florida Yards & Neighborhoods Handbook titled "A Guide to Florida Friendly Landscaping" by the University of Florida, Institute of Food and Agricultural Sciences (UF/IFAS) and available online at http://www.floridayards.org/landscape/FYN-Handbook.pdf.<<

[[~~(2) The use of mulch shall be restricted to planting areas.~~

~~(3)~~]] >>(2)<< Cypress mulch shall not be used because its harvest degrades cypress wetlands.

* * *

Section 5. Section 18A-7 of the Code of Miami-Dade County, Florida is hereby amended as follows:

Sec. 18A-7. Landscape plan review criteria.

In the unincorporated area all landscape plans shall be reviewed by the Department of Planning and Zoning, and where existing trees or [[~~natural forest communities~~]] >>Natural Forest Communities or Environmentally Endangered Lands<< are involved, the Department of Environmental Resources Management. In the case of a municipality, landscape plans shall be approved by the department(s) or board(s) as deemed appropriate within the municipality. Landscape plans shall be reviewed in accordance with the following goals and objectives and the guidelines and illustrations provided in the Landscape Manual >>as well as the Guide to Florida-Friendly Landscaping provided by the Florida Yards and Neighborhoods Program<<:

(A) Landscape design shall enhance architectural features[[,]]>>;<< relate structure design to the site[[,]]>>;<< visually screen dissimilar uses and unsightly views[[,]]>>;<< reduce noise>>,glare and heat gain<< [[~~impacts~~]] from >>paved areas,<< major roadways and incompatible uses[[,]]>>;<< strengthen important vistas and reinforce neighboring site design and architecture.

(B) Existing specimen trees, native vegetation (including canopy, understory, and ground cover) and Natural Forest Communities shall be preserved to the maximum extent possible and all requirements of Section 24-[[~~60~~]]>>49<< of the Code >>of Miami-Dade County shall be met. Preserved Natural Forest Community areas shall be deducted from the total area used to calculate minimum landscaping requirements. Native vegetation in these Natural Forest Community areas shall not be used to satisfy minimum landscape requirements<<.

(C) In order to conserve water, reduce maintenance, and promote plant health, plant species shall be selected and installed based on their water needs, growth rate and size, and resource inputs. Plants with similar water needs shall be grouped in hydrozones. Adequate growth area >>, including rooting space<<, based on natural mature shape and size shall be provided for all plant materials.

* * *

Section 6. If any section, subsection, sentence, clause or provision of this ordinance is held invalid, the remainder of this ordinance shall not be affected by such invalidity.

Section 7. It is the intention of the Board of County Commissioners, and is hereby ordained that the provisions of this ordinance shall become and made a part of the Code of Miami-Dade County, Florida. The section of this ordinance may be renumbered or relettered to accomplish such intention, and the word "ordinance" may be changed to "section", "article" or other appropriate word.

Section 8. This ordinance shall become effective ten (10) days after the date of enactment unless vetoed by the Mayor, and if vetoed, shall become effective only upon an override by this Board.

PASSED AND ADOPTED:

Approved by County Attorney as to form and legal sufficiency: APW for RAC

Prepared by: CHC

Craig H. Coller

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Memorandum

MIAMI-DADE COUNTY

Date: May 5, 2009

To: Honorable Chairman Dennis C. Moss
and Members, Board of County Commissioners

Agenda Item No. 7(G)

From: George M. Burgess
County Manager

Subject: Ordinance Creating Chapter 18B of the Code of Miami-Dade County, the Miami-Dade County Right-of-Way Landscape Ordinance .

This Substitute Item #2 differs from the original item as follows:

- **It exempts from the ordinance zoned or dedicated rights-of-way adjacent to land being used for bonafide agricultural activities.**
- **Revises the mulching criteria in order to reflect Florida Friendly landscapes.**
- **Substitute No. 2 differs from Substitute No. 1 in that it complies with the new rule change regarding substitutes and alternates as provided in Ordinance #09-13 adopted on March 3, 2009.**

Recommendation
It is recommended that the Board of County Commissioners (BCC) adopt the attached ordinance creating the Miami-Dade County Right-of-Way Landscape Ordinance. This ordinance is being created to supplement outdoor water conservation measures in accordance with the Miami-Dade Water Use Efficiency Plan adopted pursuant to Resolution No. R-468-06.

Scope
This ordinance is of countywide impact.

Fiscal Impact/Funding Source
The proposed ordinance creates no fiscal impact on Miami-Dade County.

Track Record/Monitor
Not applicable.

Background
On April 25, 2006 the Board adopted Resolution R-468-06 which approves the Miami-Dade Water Use Efficiency Plan (Plan) as a part of a larger effort to improve the management of traditional water supplies while improving the efficiency of the County's current water use. The Plan outlines the County's water efficiency measures and best management practices. The South Florida Water Management District (District) approved the Plan as a condition of the County's 20-Year Water Use Permit issued on November 15, 2007. During the first year of the Plan, WASD kicked-off its conservation efforts by implementing a series of efficiency projects. It is calculated that the total water use savings from these projects will yield a savings of 20 million gallons a day through 2026, including indoor and outdoor water use.

In addition to the implementation of the Plan, an Advisory Committee was established in 2007 at the request of the Government Operations and Environment Committee Chair with the goal of developing countywide guidelines that address water conservation issues and alternative water supplies to assist the County in meeting the conditions of the 20-Year Water Use Permit.

The Advisory Committee is comprised of several county agencies including the departments of Building, Environmental Resources Management, Fire Rescue, Park & Recreation, Planning & Zoning, Public Works, and Water and Sewer; the Building Code Compliance Office and the General Services Administration. In addition to County staff, the Advisory Committee includes representation from stakeholder groups such as the American Society of Landscape Architects, South Florida Builders Association, Sierra Club, Latin Builders Association, Tropical Audubon Society, Association of Cuban Engineers, South Florida Regional Planning Council, Farm Bureau, South Florida Water Management District and the Greater Miami Chamber of Commerce.

On June 5, 2007, the Advisory Committee summarized its findings and presented them to the BCC. These findings included specific recommendations for indoor and outdoor water conservation measures such as the use of high efficiency plumbing fixtures and the use of Florida Friendly landscape principles and irrigation soil moisture sensors. With regards to landscape irrigation, the Advisory Committee's findings were consistent with the "Landscape Irrigation & Florida-Friendly Design Standards" issued by the Florida Department of Environmental Protection in December 2006.

On February 5, 2008 the BCC adopted Ordinance No. 08-14 establishing indoor water conservation measures. The adopted measures call for the installation of efficient water fixtures, appliances and other water saving measures and equipment in new developments. In order to meet the water conservation goals provided in the Plan, the County must also address outdoor water conservation measures.

The proposed Right-of-Way Landscape Ordinance assists the County in meeting the outdoor water conservation goals specified in the Plan for the duration of the County's 20-Year Water Use Permit. In the development of the proposed ordinance the staff of the Department of Planning and Zoning has been working closely with the membership of the Advisory Committee to address outdoor water conservation issues and alternative water supplies for the development community as well as with the members of the Community Image Advisory Board and its Tree and Landscape Projects Sub-Committees. Consultation with other municipalities was also facilitated through these committees.

The proposed ordinance seeks to address outdoor water conservation measures in connection with rights-of-ways in both unincorporated Miami-Dade and in municipalities. It creates a Right-of-Way Landscape Ordinance (Chapter 18B) that mirrors the existing Landscape Ordinance contained in Chapter 18A of the Code, including the proposed concurrent amendments to the same. Presently rights-of-ways are not specifically regulated for water conservation measures. Interlocal agreements with the municipalities will be subsequently executed in order to implement the proposed ordinance.

Section 1 of this ordinance establishes Chapter 18B as the Miami-Dade County Right-of-Way Landscape Ordinance and provides applicability, definitions, purpose and intent of the

same. It also provides the minimum standards for irrigation, plant material and mulch. More specifically this section:

- Establishes the irrigation sub-section in order to address the design, operation and maintenance of effective irrigation systems. Efforts are made to minimize free water flow conditions and to maximize the uniformity of the system by considering the emitters type, the head spacing, the sprinkler patterns and the water pressure. The section also requires the use of rain switches such as soil moisture sensors.
- Requires that fifty (50) percent of the plant material to be low maintenance and drought tolerant. Canopy trees are preferred where conditions are appropriate.
- Requires that eighty (80) percent of the trees and shrubs provided be listed in the Landscape Manual, the Street Tree Master Plan or the University of Florida's Low Maintenance Landscape Plants for South Florida list.
- Requires mulches to be applied and maintained in accordance with Florida Friendly Landscaping.

This ordinance is complementary to the Miami-Dade Landscape Ordinance and its proposed update.

Alex Muñoz
Assistant County Manager

MEMORANDUM

(Revised)

TO: Honorable Chairman Dennis C. Moss and Members, Board of County Commissioners

DATE: May 5, 2009

FROM: R. A. Cuevas, Jr. County Attorney

SUBJECT: Agenda Item No. 7(G)

Please note any items checked.

____	**"4-Day Rule" ("3-Day Rule" for committees) applicable if raised**
✓	**6 weeks required between first reading and public hearing**
✓	**4 weeks notification to municipal officials required prior to public hearing**
____	**Decreases revenues or increases expenditures without balancing budget**
____	**Budget required**
____	**Statement of fiscal impact required**
____	**Bid waiver requiring County Mayor's written recommendation**
____	**Ordinance creating a new board requires detailed County Manager's report for public hearing**
____	**Housekeeping item (no policy decision required)**
____	**No committee review**

Approved _____ Mayor

Veto _____

Override _____

Agenda Item No. 7(G)

5-5-09

ORDINANCE NO. _____

ORDINANCE CREATING CHAPTER 18B OF THE CODE OF MIAMI-DADE COUNTY, FLORIDA ("CODE"), MIAMI-DADE COUNTY RIGHT-OF-WAY LANDSCAPE ORDINANCE, CREATING SECTIONS 18B-1 THROUGH 18B-4, PROVIDING SEVERABILITY, INCLUSION IN THE CODE AND AN EFFECTIVE DATE

BE IT ORDAINED BY THE BOARD OF COUNTY COMMISSIONERS OF MIAMI-DADE COUNTY, FLORIDA:

Section 1. Chapter 18B of the Code of Miami-Dade County is hereby created as follows:

CHAPTER 18B MIAMI-DADE COUNTY RIGHT-OF-WAY LANDSCAPE ORDINANCE

Sec. 18B-1. Short title and applicability.

(A) This chapter shall be known and may be cited as the "Miami-Dade County Right-of-Way Landscape Ordinance".

(B) *Applicability.* This chapter shall be a minimum standard and shall apply to all public rights-of-way both in the incorporated and unincorporated areas >>except for zoned or dedicated rights-of-way adjacent to lands being used for bonafide agricultural activities as defined in Chapter 18A of this Code<<. Enforcement in the unincorporated area shall be by the County and in the incorporated areas by the municipalities; provided, any municipality may establish and enforce more stringent regulations as such municipality may deem necessary. In the event the provisions hereof are not enforced within any municipality, the County shall enforce same.

Sec. 18B-2. Purpose and intent.

It is the intent of this chapter to establish minimum landscape standards for public rights-of-way in incorporated and unincorporated Miami-Dade County that enhance, improve and maintain the quality of the landscape, and to:

(A) Promote [[~~xeriscape and~~]] Florida Friendly principles through the use of drought-tolerant landscape species, grouping of plant material by water requirements, the use of irrigation systems that conserve the use of potable and nonpotable water supplies and restrictions on the amount of lawn areas.

(B) Use landscape material, specifically street trees, to visually define the hierarchy of roadways, and to provide shade and a visual edge along roadways.

(C) Prevent the destruction of the community's existing tree canopy and promote its expansion.

(D) Provide for the preservation of existing natural forest communities and specimen sized trees in conformance with Section 24-49, as may be amended from time to time; re-establish native habitat where appropriate, and encourage the appropriate use of native plant material in the landscape.

(E) Promote the use of trees and shrubs for energy conservation by encouraging cooling through the provision of shade and the channeling of breezes, thereby helping to offset global warming and local heat island effects through the added absorption of carbon dioxide and reduction of heat islands.

(F) Contribute to the processes of air movement, air purification, oxygen regeneration, ground water recharge, and retention of stormwater runoff, as well as aiding in the abatement of noise, glare, heat, air pollution and dust generated by major roadways and intense use areas.

(G) Reduce the negative impacts of exotic pest plant species and prohibit the use of noxious exotic plants which invade native plant communities.

(H) Promote the use of trees to protect and buffer the effects of high winds on structures.

(I) Promote the concept of planting the right tree or plant in the right place to avoid problems such as clogged sewers, cracked sidewalk and power services interruptions.

Sec. 18B-3. Definitions.

The definitions contained in Chapters 18A, Code of Miami-Dade County, Florida, shall apply to this chapter.

Sec. 18B-4. Minimum standards.

(A) *Irrigation.*

(1) All newly-planted and relocated plant material shall be watered by temporary or permanent irrigation systems until such time as they are established and subsequently on as needed basis to prevent stress and die off in compliance with existing water use restrictions.

(2) Irrigation systems shall be prohibited within native plant communities and natural forest communities, except for temporary systems needed to establish newly planted material. Temporary irrigation systems shall be disconnected immediately after establishment of plant communities.

(3) Irrigation systems shall be designed, operated and maintained to:

(a) Meet the needs of the plants in the landscape.

(b) Conserve water by allowing differential operation schedules based on hydrozone.

(c) Consider soil, slope and other site characteristics in order to minimize water waste, including overspray or overflow on to impervious surfaces and other non-vegetated areas, and off-site runoff.

(d) Minimize free flow conditions in case of damage or other mechanical failure.

(e) Use low trajectory spray heads, and/or low volume water distributing or application devices.

(f) Maximize uniformity, considering factors such as:
(1) Emitters types,
(2) Head spacing,
(3) Sprinkler pattern, and
(4) Water pressure at the emitter.

(g) Use the lowest quality water feasible (graywater shall be used where approved systems are available).

(h) Rain switches or other devices, such as soil moisture sensors, shall be used with automatic controls.

(i) Operate only during hours and on days permitted under Chapter 32 of this Code.

(j) Where feasible, drip irrigation or micro-sprinklers shall be used.

(4) During dry periods, irrigation application rates of between one (1) and one and one-half (1 1/2) inches per week are recommended for turf areas.

(B) *Plant Material and Mulch.*

(1) At least fifty (50) percent of the plant material shall be low maintenance and drought tolerant. Canopy trees are preferred where conditions are appropriate.

(2) Eighty (80) percent of the plant material shall be listed in the Miami-Dade Landscape Manual, the Miami-Dade Street Tree Master Plan and/or the University of Florida's Low-Maintenance Landscape Plants for South Florida list.

(3) Right-of-way landscaping shall include the use of native plant species in order to re-establish an aesthetic regional quality and take advantage of the unique diversity and adaptability of native species to the environmental conditions of South Florida.

(4) Where feasible, the re-establishment of native habitats shall be incorporated into the landscaping.

(5) Existing specimen trees, native vegetation (including canopy, understory, and ground cover) and Natural Forest Communities shall be preserved to the maximum extent possible and all requirements of Section 24-49 of the Code of Miami-Dade County.

(6) In order to conserve water, reduce maintenance, and promote plant health, plant species shall be selected and installed based on their water needs, growth rate and size, and resource inputs. Plants with similar water needs shall be grouped in hydrozones. Adequate growth area (including rooting space), based on natural mature shape and size shall be provided for all plant materials.

(7) Trees and shrubs shall be planted in the energy conservation zone where feasible, in order to reduce energy consumption by shading buildings and other structures and shall be used to reduce heat island effects by shading paved surfaces.

(8) Street trees shall be used to shade roadways and provide visual order. Where feasible, selected species shall be used to establish a road hierarchy by defining different road types.

(9) Prohibited trees shall be removed.

(10) Special attention shall be given to the use of appropriate species located under, or adjacent to overhead power lines, and near native plant communities and near underground utility lines. Adequate growth area shall be provided for all plant materials.

(11) Landscaping shall be designed in such a way as to provide safe and unobstructed views at intersections of roadways, driveways, recreational paths and sidewalks in accordance with Section 33-11 of the Code of Miami-Dade County and in compliance with federal and state standards.

(12) Historic landscapes and landscape features designated by local, State or federal governments shall be preserved.

[[~~(13) Environmentally friendly organic mulches shall be applied and maintained in a minimum three (3) inch layer under and around all trees and shrubs, and in a minimum two (2) inch layer under and around all ground cover.~~

~~(14) The use of mulch shall be restricted to planting areas.~~]]

>>(13) Mulches shall be applied and maintained in accordance with the most recent edition of the Florida Yards & Neighborhoods Handbook titled "A Guide to Florida Friendly Landscaping" by the University of Florida, Institute of Food and Agricultural Sciences (UF/IFAS) and available online at http://www.floridayards.org/landscape/FYN-Handbook.pdf.<<

[[~~(14)~~]] >>(15)<< Cypress mulch shall not be used because its harvest degrades cypress wetlands.

Section 2. If any section, subsection, sentence, clause or provision of this ordinance is held invalid, the remainder of this ordinance shall not be affected by such invalidity.

Section 3. It is the intention of the Board of County Commissioners, and it is hereby ordained that the provisions of this ordinance, including any sunset provision, shall become and be made part of the Code of Miami-Dade County, Florida. The sections of this ordinance may be renumbered or relettered to accomplish such intention, and the word "ordinance" may be changed to "section," "article," or other appropriate word.

Section 4. This ordinance shall become effective ten (10) days after the date of enactment unless vetoed by the Mayor, and if vetoed, shall become effective only upon an override by this Board.

PASSED AND ADOPTED:

Approved by County Attorney as to form and legal sufficiency: APW for RAC

Prepared by: CHC

Craig H. Coller

MEMORANDUM

Agenda Item No. 7(B)

TO:	Honorable Chairman Dennis C. Moss and Members, Board of County Commissioners	**DATE:**	April 7, 2009
FROM:	R. A. Cuevas, Jr. County Attorney	**SUBJECT:**	Ordinance amending Section 32-8.2 of the Code relating to the permanent landscape irrigation restrictions

This ordinance was amended by the Governmental Operations Committee to correct scrivener's errors regarding the current drought restriction in the third Whereas clause and the irrigation of new lawns for thirty days in Section (d) (ii) (7).

The accompanying ordinance was prepared and placed on the agenda at the request of Prime Sponsor Commissioner Natacha Seijas.

R. A. Cuevas, Jr.
County Attorney

RAC/cp

Memorandum

MIAMI-DADE COUNTY

Date: April 7, 2009

To: Honorable Chairman Dennis C. Moss
and Members, Board of County Commissioners

From: George M. Burgess
County Manager

Subject: Ordinance amending Section 32-8.2 of the Code relating to the permanent landscape irrigation restrictions

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The ordinance relating to permanent landscape irrigation restrictions is not expected to have a fiscal impact to Miami-Dade County. The permanent landscape irrigation restrictions are a continuation of the watering restriction imposed by the South Florida Water Management District for more than two years. In the long term, it is expected that water conservation measures such as this are more cost effective in meeting our future water demands in lieu of constructing and operating new water supply facilities.

Alex Munoz
Assistant County Manager

Fis02109

MEMORANDUM

(Revised)

TO: Honorable Chairman Dennis C. Moss and Members, Board of County Commissioners

DATE: April 7, 2009

FROM: R. A. Cuevas, Jr. County Attorney

SUBJECT: Agenda Item No. 7(B)

Please note any items checked.

_____	**"4-Day Rule" ("3-Day Rule" for committees) applicable if raised**
✓	**6 weeks required between first reading and public hearing**
✓	**4 weeks notification to municipal officials required prior to public hearing**
_____	**Decreases revenues or increases expenditures without balancing budget**
_____	**Budget required**
_____	**Statement of fiscal impact required**
_____	**Bid waiver requiring County Mayor's written recommendation**
_____	**Ordinance creating a new board requires detailed County Manager's report for public hearing**
_____	**Housekeeping item (no policy decision required)**
_____	**No committee review**

Approved _____ Mayor

Veto _____

Override _____

Agenda Item No. 7(B)

4-7-09

ORDINANCE NO. _____

ORDINANCE AMENDING SECTION 32-8.2 OF THE CODE OF MIAMI-DADE COUNTY, FLORIDA, RELATING TO PERMANENT LANDSCAPE IRRIGATION RESTRICTIONS; PROVIDING MANDATORY YEAR-ROUND LANDSCAPE IRRIGATION CONSERVATION MEASURES; AMENDING CHAPTER 8CC OF THE CODE OF MIAMI-DADE COUNTY, FLORIDA, RELATING TO CODE ENFORCEMENT; PROVIDING SEVERABILITY, INCLUSION IN THE CODE AND AN EFFECTIVE DATE

>>**WHEREAS**, the South Florida Water Management District ("District") has statutory authority to declare a water shortage when insufficient ground or surface water is available to meet the needs of the users or when conditions are such as to require temporary reduction in total use within an area to protect water resources from serious harm; and[1]

WHEREAS, the District previously issued a declaration of water shortage condition for Miami-Dade County based on the region's ongoing drought and the water level of Lake Okeechobee which is operationally controlled by the District; and

WHEREAS, the District invoked Modified Phase II drought restrictions which limited landscape irrigation to two days per week in Miami-Dade County; and

WHEREAS, to protect the water resources in Miami-Dade County, this Board previously enacted Section 32-8.2 of the Code of Miami-Dade County which permanently

[1] Words stricken through and/or [[double bracketed]] shall be deleted. Words underscored and/or >>double arrowed<< constitute the amendment proposed. Remaining provisions are now in effect and remain unchanged.

prohibits landscape irrigation daily between 9:00 am and 5:00 pm except as otherwise provided; and

WHEREAS, due to fluctuating weather conditions and changing water levels of Lake Okeechobee, it is anticipated the District will impose and lift restrictions periodically in order to properly manage flood and drought conditions in the region; and

WHEREAS, this Board finds that it is in the best interest of the people of Miami-Dade County to have a consistent and permanent landscape irrigation policy; and

WHEREAS, this Board finds that a year-round uniform policy for landscape irrigation will effectively protect the water resources of Miami-Dade County and help ensure the availability of potable water to meet the County's projected demand for water,

NOW, THEREFORE,<< BE IT ORDAINED BY THE BOARD OF COUNTY COMMISSIONERS OF MIAMI-DADE COUNTY, FLORIDA:

Section 1. Section 32-8.2 of the Code of Miami-Dade County, Florida, is hereby amended to read as follows:

Sec. 32-8.2. Permanent landscape irrigation restrictions.

(a) *Intent and purpose.* To protect the water resources of Miami-Dade County, Florida from the harmful effects of over utilization[[~~by prohibiting~~]]>>, increase water use efficiency and prevent and curtail wasteful water use practices by providing mandatory year-round<< landscape irrigation >>conservation measures<< [[~~during periods of high evaporation,~~]] and prohibiting the operation of irrigation systems [[~~operated~~]] in a manner causing water to be wasted.

(b) *Definitions.* In construing the provisions of this section, the following definitions shall apply:

>>(1) *Address* shall mean the "house number" (a numeric or alphanumeric designation) that, together with the

street name, describes the physical location of a specific property. This includes "rural route" numbers but excludes post office box numbers. If a lot number in a mobile home park or similar community is used by the U.S. Postal Service to determine a delivery location, the lot number shall be the property's address. If a lot number in a mobile home park or similar residential community is not used by the U.S. Postal Service (e.g. the park manager sorts incoming mail delivered to the community's address), then the community's main address shall be the property's address. If a property has no address it shall be considered "even-numbered".

(2) *Athletic play area* shall mean all golf course fairways, tees, roughs and greens and other athletic play surfaces; including, football, baseball, soccer, polo, tennis and lawn bowling fields, rodeo, equestrian and livestock arenas.

(3) *Even Numbered Address* means an address ending in the numbers 0, 2, 4, 6, 8, or rights-of-way or other locations with no address or the letters A-M.

(4) *Existing Landscape* shall mean any landscaping where a period of 90 days has lapsed from the date of purchase.<<

[[~~(1)~~]]>>(5)<<*Irrigation* shall mean the application of water by means other than natural precipitation.

[[~~(2)~~]]>>(6)<<*Irrigation systems* shall mean equipment and devices which deliver water to the [[~~plants~~]] >>landscape<< being irrigated including, but not limited to, pumping stations, controls, main and submain pipelines, lateral pipelines, emitters, valves, fittings and safety devices.

[[~~(3)~~]]>>(7)<<*Landscape* shall mean all residential, commercial, institutional, industrial or governmental areas which are ornamentally planted including, but not limited to, turf, ground covers, flowers, shrubs, trees, sand, mulch, hedges and similar plant materials>>, lawns, sod, grass and such other flora, not intended for resale, which are situated in locations including, but

not limited to, residential landscapes, recreation areas, cemeteries, public, commercial, and industrial establishments, public medians, and rights-of-way except athletic play areas and public gardens as defined herein.

(8) *Low Volume Hand Watering* shall mean the watering of landscape by one person, with one hose, fitted with a self-canceling or automatic shutoff nozzle.

(9) *Low Volume Irrigation* shall mean the use of equipment and devices specifically designed to allow the volume of water delivered to be limited to a level consistent with the water requirement of the plant being irrigated and to allow that water to be placed with a high degree of efficiency in the root zone of the plant. The term also includes water used in mist houses and similar establishments for plant propagation. Overhead irrigation and flood irrigation are not included.

(10) *Landscape Irrigation* shall mean the outside watering of shrubbery, trees, lawns, sod, grass, ground covers, plants, vines, ornamental gardens, and such other flora not intended for resale, which are planted and are situated in such diverse locations as residential landscapes, recreation areas, cemeteries, public, commercial, and industrial establishments, public medians, and rights-of-way except athletic play areas and public gardens as defined herein.

(11) *Micro-Irrigation* shall mean the application of small quantities of water on or below the soil surface as drops or tiny streams of spray through emitters or applicators placed along a water delivery line. Micro-irrigation includes a number of methods or techniques such as bubbler, drip, trickle, mist or microspray, and subsurface irrigation.

(12) *New Landscaping* shall mean any landscaping where the period of time from the date of purchase is ninety (90) days or less.

(13) *Odd Numbered Address* shall mean an address ending in the numbers 1, 3, 5, 7, 9, or the letters N-Z.

(14) *Public Gardens* shall mean botanical gardens and zoological parks and any planned outdoor space where landscaping is cared for and exhibited and the facility is open to the public at least six months during a twelve month period.

(15) *Reclaimed Water* shall mean wastewater as defined in Rule 62-40.210, F.A.C.

(16) *User* shall mean any person, individual, firm, association, organization, partnership, business trust, corporation, company, agent, employee or other legal entity whether natural or artificial, the United States of America, and the State and all political subdivisions, regions, districts, municipalities, and public agencies thereof, which directly or indirectly takes water from the water resource, including users of private or public utility systems, individual wells or pumps.

(17) *Wasteful and Unnecessary* shall mean allowing water to be dispersed without any practical purpose to the water use; for example, excessive landscape irrigation, leaving an unattended hose on a driveway with water flowing, allowing water to be dispersed in a grossly inefficient manner, regardless of the type of water use; for example, allowing landscape irrigation water to unnecessarily fall onto pavement, sidewalks and other impervious surfaces; allowing water flow through a broken or malfunctioning water delivery or landscape irrigation system.<<

[[~~(4)~~]]>>(18)<<*Water resource* shall mean water on or beneath the surface of the ground including, but not limited to, natural or artificial watercourses, lakes, ponds, or diffused surface water, and water percolating, standing, or flowing beneath the surface of the ground.

[[~~(5) *Low-volume irrigation* shall mean the use of equipment and devices specifically designed to~~

~~allow the volume of water delivered to be limited to a level consistent with the water requirement of the plant being irrigated and to allow that water to be placed with a high degree of efficiency in the root zone of the plant including, but not limited to, water use in mist houses and similar establishments for plant propagation.~~]]

(c) *Application of section:* The provisions of this section shall apply to all [[~~persons using~~]]>>users of<< any water resource within Miami-Dade County, whether from publicly or privately owned water utility systems, private wells, or private connections with surface water bodies. >>The provisions of this section shall not apply to athletic play areas and public gardens as defined herein and users under water use permits issued pursuant to Chapter 40E-2 and 40E-20, F.A.C.<<

(d) *Permanent landscape irrigation restrictions:*

(i) [[~~It shall be unlawful for any person to irrigate or to cause, let, permit, allow or suffer the irrigation of any residential, commercial, institutional, governmental or industrial landscape areas between the hours of 9:00 a.m. and 5:00 p.m. daily.~~]]>>It shall be the duty of each user to keep informed as to the landscape irrigation conservation measures presented within this section, which affect each particular water use.<<

(ii) >>The following requirements shall apply to all users unless specified otherwise herein:

(1) Irrigation of existing landscaping shall comply with the following:<<

[[~~(i)~~]]>>(a)<<It shall be unlawful for any [[~~person~~]] >>user<< to irrigate or to cause, let, permit, allow or suffer the irrigation of any residential, commercial, institutional, governmental or industrial landscape areas between the hours of [[~~9:00 a.m. and 5:00 p.m.~~]] >>10:00 am and 4:00 pm daily except as otherwise provided herein.<<

[[~~(ii)~~]] >>(b)<<It shall be unlawful for any [[~~person~~]]>>user<< to operate or cause, let, permit, allow or suffer the operation of any irrigation system or device in a >>wasteful and unnecessary<< manner [[~~causing water to be wasted~~]] including, but not limited to, watering paved areas, sidewalks, driveways, and parking lots.

>>(c) Even addresses, installations with irrigation systems that irrigate both even and odd addresses within the same zones, including multi-family units and homeowners' associations, and rights-of-way or other locations with no address, as defined in this section shall only conduct necessary landscaping irrigation on Thursday or Sunday or both Thursday and Sunday.

(d) Odd addresses as defined in this section shall only conduct necessary landscape irrigation on Wednesday or Saturday or both Wednesday and Saturday.

(2) Users irrigating new landscaping shall comply with the following:

(a) Irrigation of new landscaping shall be prohibited between the hours of 10:00 a.m. and 4:00 p.m. daily, except as otherwise provided herein.

(b) On the day the new landscaping is installed, the new landscaping may be irrigated once without regard to the normally allowable watering days and times. Irrigation of the soil immediately prior to the installation of the new landscaping is also

allowable without regard to the normal allowable watering days and times.

(c) Irrigation of new landscaping which has been purchased for ninety (90) days or less may be conducted on any day except Friday.

(d) The date of purchase of new landscaping may be demonstrated with a dated receipt or invoice.

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

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

(4) Landscape irrigation for the purpose of watering-in fertilizers, insecticides, pesticides, fungicides and herbicides, where such watering-in is recommended by the manufacturer, or by federal, state or local law, or by Florida Green Industries Best Management Practices for Protection of Florida Water Resources Manual, shall be allowed under the following conditions:

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

(b) Such watering-in shall be accomplished during normally allowable watering days and times set forth in paragraphs (d)(ii)(1)(c) and (d)(ii)(1)(d) unless a professional licensed applicator has posted a temporary sign containing the date of application and the date(s) of needed watering-in activity.

(5) Any landscaping may be irrigated using low volume irrigation, micro-irrigation, low-volume hand watering methods including but not limited to the use of a hose with a self-canceling or closing nozzle, rain barrels, cisterns, or other similar rain-harvesting devices without regard to the watering days or times allowed pursuant to this section.

(6) Any landscaping may be irrigated with reclaimed water in accordance with federal, State and local water reuse quality standards, or the use of saltwater without regard to the watering days or times allowed pursuant to this section.

(7) Irrigation of new lawns and landscaping shall be allowed between 11:00 a.m. and 12:01 p.m. daily for a period of thirty (30)

days or until the lawn or landscaping is considered established, whichever period is shorter. <<

[[~~(iii) The following shall be exempt from the requirements of Section 32-8.2(d)[[(i):~~

~~1. Low-volume irrigation systems and hand-watering including but not limited to the use of a hose with a self-canceling or closing nozzle.~~

~~2. Irrigation with treated wastewater effluent, in accordance with federal, State and local water reuse quality standards, or the use of saltwater.~~

~~3. Irrigation of landscaping for purposes of watering in fungicides, insecticides and herbicides, where watering is required by the manufacturer or by federal, State or local laws. This exemption shall apply only to licensed pest control applicators and shall be limited to the minimum amount specified by the manufacturer's recommendations for the products applied.~~

~~4. The operation of irrigation systems for installation, cleaning, repairs, and maintenance purposes by a licensed irrigation contractor or the property owner(s). Each irrigation zone may be tested no more than once a week by the property owner(s) and more frequently by a licensed irrigation contractor. However, such testing shall be limited to the minimum necessary to maintain efficient operation of the system.~~

~~5. Irrigation of new lawns and landscaping between 11:00 a.m. and 12:01 p.m. daily for a period of thirty (30) days or until the lawn or landscaping is considered established, whichever period is shorter.~~]]

>>(e) *Enforcement.*

Every police officer or sheriff having jurisdiction in the area governed by this section shall, in connection with all other duties imposed by law, diligently enforce the provisions of this section. Officers may provide violators with no more than one (1) written warning. This section shall also be enforceable in accordance with the provisions of Chapter 8CC of this code. The County may take any appropriate legal action, including but not limited to emergency prohibitory and mandatory injunctive action to enforce the provisions of this section.

(f) *Penalties.*

Violations of any provision of this section shall be subject to the following penalties:

First violation: Seventy-five ($75.00) fine.

Second and subsequent violations: Fine not to exceed five hundred dollars ($500.00) and/or imprisonment in the County jail not to exceed sixty (60) days.

Each day in violation of this section shall constitute a separate offense.<<

Section 2. Chapter 8CC of the Code of Miami-Dade County, Florida, is hereby amended to read as follows:

Sec. 8CC-10. Schedule of civil penalties.

Code Section	*Description of Violation*	*Civil Penalty*
>>32-8.2	Violation of Permanent Landscape Irrigation Restrictions	$75.00<<

Section 3. If any section, subsection, sentence, clause or provision of this ordinance is held invalid, the remainder of this ordinance shall not be affected by such invalidity.

Section 4. It is the intention of the Board of County Commissioners, and it is hereby ordained that the provisions of this ordinance, including any sunset provision, shall become and be made a part of the Code of Miami-Dade County, Florida. The sections of this ordinance may be renumbered or relettered to accomplish such intention, and the word "ordinance" may be changed to "section," "article," or other appropriate word.

Section 5. This ordinance shall become effective ten (10) days after the date of enactment unless vetoed by the Mayor, and if vetoed, shall become effective only upon an override by this Board.

PASSED AND ADOPTED:

Approved by County Attorney as
to form and legal sufficiency:

Prepared by:

Henry N. Gillman

Prime Sponsor: Commissioner Natasha Seijas

OFFICIAL FILE COPY
CLERK OF THE BOARD
OF COUNTY COMMISSIONERS
MIAMI-DADE COUNTY, FLORIDA

Memorandum

MIAMI-DADE COUNTY

Date: (Second Reading 12-05-06)
September 26, 2006

Agenda Item No. 7(D)

To: Honorable Chairman Joe A. Martinez and Members, Board of County Commissioners

From: George M. Burgess
County Manager

Subject: Ordinance Creating Sections 32-83.1 of the Miami-Dade County Code

O#06-177

RECOMMENDATION

It is recommended that the Board of County Commissioners (Board) approve and adopt the attached ordinance creating Sections 32-83.1 of the Miami-Dade County Code. This new section will require for publicly owned water distribution systems served by the Miami-Dade Water and Sewer Department (MDWASD) to prepare water conservation plans and submit same to the County.

BACKGROUND

The Water Use Efficiency Five-Year Plan adopted by the Board through Resolution R-468-06 includes requirements for water conservation planning, implementation and reporting by wholesale customers (Section 4.2.9). MDWASD has existing contracts with the fifteen (15) wholesale customers; these contracts contain language relating to water conservation, most particularly in drought situations. The essence of the agreement is that if there is a shortage in the supply of water, wholesale customers will curtail their usage to the same extent as MDWASD. At this time there are no specific conservation requirements beyond the drought scenario.

MDWASD is presently developing a twenty-year water conservation plan as a requirement of the Interim Consumptive Use Authorization and Agreement with the South Florida Water Management District (SFWMD). In order to accurately determine the water demand projections and propose water demand reduction goals it is necessary to account for all water produced by MDWASD. In order to accomplish this task it is necessary to have the wholesale customers develop plans similar to the one developed for MDWASD's retail service area.

The 20-year plan presently under development by MDWASD utilizes the Department of Environmental Protection web-based Conserve Florida Guide. The wholesale customers would be required to use this tool in the development of their plans to allow MDWASD to consolidate the plans of the wholesale customers and combine them with the 20-year plan. This practice will also facilitate the annual reporting to the Board and the SFWMD. MDWASD will provide assistance to the wholesalers in the development of their water conservation plans and in the use of the Conserve Florida Guide. The adoption of this ordinance will provide a strategic advancement in water conservation effectiveness to MDWASD. Historically, utilities with wholesale customers have typically been ultimately responsible for the implementation of water conservation measures and best management practices, and general demand management that are required by consumptive use permits. Yet, there has been no authority to require their wholesale customers to help them meet demand management goals.

Assistant County Manager

Memorandum

MIAMI-DADE COUNTY

Date: December 5, 2006

To: Honorable Chairman Joe A. Martinez
and Members, Board of County Commissioners

From: George M. Burgess
County Manager

Subject: Ordinance Creating Section 32-83.1 of the Miami-Dade County Code

---

The ordinance creating Section 32-83.1 of the Miami-Dade County Code requires publicly owned water distribution systems served by the Miami-Dade Water and Sewer Department to prepare water conservation plans and to submit the plans to Miami-Dade County.

The ordinance will not have a fiscal impact to Miami-Dade County. However, wholesale customers may incur expenses developing the plans.

Assistant County Manager

Fis00206

MEMORANDUM
(Revised)

TO: Honorable Chairman Joe A. Martinez and Members, Board of County Commissioners

DATE: December 5, 2006

FROM: Murray A. Greenberg County Attorney

SUBJECT: Agenda Item No. 7(D)

Please note any items checked.

_____	**"4-Day Rule" ("3-Day Rule" for committees) applicable if raised**
√	**6 weeks required between first reading and public hearing**
√	**4 weeks notification to municipal officials required prior to public hearing**
_____	**Decreases revenues or increases expenditures without balancing budget**
_____	**Budget required**
_____	**Statement of fiscal impact required**
_____	**Bid waiver requiring County Manager's written recommendation**
_____	**Ordinance creating a new board requires detailed County Manager's report for public hearing**
_____	**Housekeeping item (no policy decision required)**
_____	**No committee review**

Approved _____ Mayor
Veto _____
Override _____

Agenda Item No. 7(D)
12-05-06

ORDINANCE NO. 06-177

ORDINANCE CREATING SECTION 32-83.1 OF THE CODE OF MIAMI-DADE COUNTY; PROVIDING FOR PUBLICLY OWNED WATER DISTRIBUTION SYSTEMS TO PREPARE WATER CONSERVATION PLANS AND SUBMIT SAME TO THE COUNTY; PROVIDING ENFORCEMENT PROCEDURE AND REMEDY; PROVIDING SEVERABILITY, INCLUSION IN THE CODE AND AN EFFECTIVE DATE

BE IT ORDAINED BY THE BOARD OF COUNTY COMMISSIONERS OF MIAMI-DADE COUNTY, FLORIDA:

Section 1. Section 32-83.1 of the Code of Miami-Dade County, Florida, is hereby created to read as follows[1]

>>32-83.1 Water Conservation Plans

A) *Submission of Water Conservation Plan*

Every publicly owned or operated water distribution system supplied potable water, in whole or in part, by Miami-Dade County, shall submit a water conservation plan to the County. All water conservation plans submitted must comply with the South Florida Water Management District Basis of Review for Consumptive Use Permit Application and the Florida Department of Environmental Protection Conserve Florida Guide, as well as the Environmental Protection Agency WaterSense Program. Said Plan shall be updated for the County's approval every five years following submittal and Conserve Florida Guide generated reports shall be filed annually at the close of the fiscal year. All water conservation plans submitted shall consider a twenty year horizon. In the event a publicly owned or operated water distribution system fails to provide its water

[1] Words Stricken through and/or [[double bracketed]] shall be deleted. Words underscored and/or >>double arrowed<< constitute the amendment proposed. Remaining provisions are now in effect and remain unchanged.

conservation plan by the close of the fiscal year, the County shall determine and establish the conservation measures to be implemented by said system and the amount of water supplied to such system by the County which could be conserved via implementation of such measures, and such system shall be bound by such determination and the publicly owned or operated water distribution system shall be subject to the provisions in subsection (B).

B) *Enforcement; procedure; remedies*

Where the County has, pursuant to Subsection (A), established the conservation measures and the amount of water supplied to a water distribution system which could be conserved through the implementation of such measures, the owner or operator of such system shall be required to pay additional fees, in accordance with the Miami-Dade Water and Sewer Department's schedule of rates, fees and charges, as amended, for continued use of the water which could be conserved through implementation of the specified conservation measures. The Miami Dade Water and Sewer Department shall develop a water conservation plan for the water distribution system documenting the proposed measures, best management practices and projected water savings. <<

Section 2. If any section, subsection, sentence, clause or provision of this ordinance is held invalid, the remainder of this ordinance shall not be affected by such invalidity.

Section 3. It is the intention of the Board of County Commissioners, and it is hereby ordained that the provisions of this ordinance, including any Sunset provision, shall become and be made a part of the Code of Miami-Dade County, Florida. The sections of this ordinance may be renumbered or relettered to accomplish such intention and the word "ordinance" may be changed to "section", "article" or other appropriate word.

Section 4. This ordinance shall become effective ten (10) days after the date of enactment unless vetoed by the Mayor, and if vetoed, shall become effective only upon an override by this Board.

PASSED AND ADOPTED: December 5, 2006

Approved by County Attorney as to form and legal sufficiency.

Prepared by:

David M. Murray

APPENDIX E

Table 5: Countywide Water Conservation BMPs

Miami-Dade Water and Sewer Department Water Conservation Best Management Practices (BMPs)			
June 2020			
Water Saving BMPs	**Gallons per Day (GPD) Savings Per BMP**	**Annual Target Rebates**	**Annual GPD Target**
OTHER			
Faucet Aerators	12	100	1,200
INDOOR			
Showerhead Exchange	35	700	24,500
REBATES			
High Efficiency Toilet Rebates	29	2180	63,220
High Efficiency Showerheads	35	352	12,320
High Efficiency Faucets	12	650	7,800
LANDSCAPE & IRRIGATION EVALUATIONS			
Water-Efficient Landscape and Irrigation Evaluation and Rebates-Single Family Homes (GPD/Per Property)	233	90	20,970
Water-Efficient Landscape and Irrigation Evaluation and Rebates-Non Single Family Homes (GPD/Per Acre)	1,400	45	130,000
TOTAL			**260,010**

APPENDIX F

Water Conservation Plan
2021 Annual Report

MIAMI-DADE COUNTY
miamidade.gov

Water and Sewer
PO Box 330316 • 3071 SW 38 Avenue
Miami, Florida 33233-0316
T 305-665-7471

April 28, 2022

Electronic Correspondence
SFWMD eCompliance
CCN: 64330
File Nos. 8DC.19.17

Mr. Richard Illsley
Compliance Analyst – Water Use Bureau
South Florida Water Management District
3301 Gun Club Road
West Palm Beach, FL 33416-4680
Email: rillsley@sfwmd.gov

Subject: Miami-Dade County Consolidated PWS, Water Use Permit No. 13-00017-W, 2021 Annual Report on the Water Conservation Plan, Special Permit Condition 17

Dear Mr. Illsley:

In accordance with Special Permit Condition 17 of Water Use Permit No. 13-00017-W, the 2021 Annual Report on the Water Conservation Plan is attached.

Should you have any questions, please contact our Resilience Manager, Ms. Debbie Griner at 786-552-8781 or Ms. Cynthia Doyon at 786-552-8369.

Sincerely,

James B. Ferguson, P.E
Assistant Director, Planning and Regulatory Compliance
Miami-Dade Water and Sewer Department

Attachment

L22052SFWMD-SC17-WCP

Miami-Dade Water & Sewer Department

Miami-Dade Consolidated PWS
Water Use Permit No. 13-00017-W

Water Conservation Plan
2021 Annual Report

January 1, 2021 - December 31, 2021

Miami-Dade Water & Sewer Department
3071 SW 38th Avenue
Miami, FL 33146

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INTRODUCTION

On November 15, 2007, the South Florida Water Management District (SFWMD) Governing Board approved the Miami-Dade Consolidated Water Use Permit (WUP) which required Miami Dade County (COUNTY) through Miami Dade Water & Sewer Dept. (WASD) to develop a 20-year Water Use Efficiency Plan (Plan) to conserve 19.6 million gallons of water a day (MGD). The following is a summary of changes to the WUP since the approval of the permit:

On November 1, 2010, SFWMD reissued the permit extending the WUP an additional three years; on December 16, 2012, the permit was again reissued to increase the permitted allocation and to modify the water supply for the South Miami Heights Water Treatment Plant to include allocation from the Floridan Aquifer. On February 9, 2015, SFWMD issued a modification to the WUP, extending the expiration date to February 9, 2035. The permit was again re-issued on September 21, 2015 due to revisions of certain special permit conditions (specifically 12, 13, 16, 22, 26 through 35 and 38). SFWMD issued a new permit to the COUNTY on March 8, 2022 expiring in 2065. Any changes to the water conservation plan referenced in the permit will be reflected in next year's annual report.

To comply with the original WUP requirements, WASD developed the Plan using Florida Department of Environmental Protection's Conserve Florida EZ Guide (Guide). The Guide was developed as a web-based application for goal-based water conservation planning. WASD was the first utility in the state to use the Guide to develop, administer and report its goal-based water conservation program.

Implementation of the Guide's Best Management Practices (BMPs) assists WASD with meeting the projected 19.62 MGD water savings target by 2026, as required by the WUP. As of September 30, 2021, cumulative water savings from BMPs are 16.19 MGD, exceeding the 2021 water savings goal of 15.67 MGD.

COVID-19 impacted the COUNTY's water conservation program again this year; toilet, showerhead and faucet rebates did not reach their targeted goals. As the same with last year though, the landscape irrigation rebate program exceeded its targeted water savings showing the popularity of the program with residents.

WASD hereby submits the fifteenth Water Conservation Plan Annual Progress Report detailing the COUNTY's actions and efforts to comply with Special Permit Condition No. 17 of the WUP.

SUMMARY

The Plan was created utilizing the Guide to develop and implement BMPs. The use of quantifiable BMPs has assisted in reviewing and evaluating planned and reported water savings on an annual basis to ensure the implementation of a cost-effective conservation program.

BMPs developed by the Guide included in the Plan are measured and counted toward the 2026 cumulative water savings goal of 19.62 MGD. These BMPs include financial rebates for the purchase and installation of indoor high efficiency fixtures including toilets, faucets and showerheads for properties constructed prior to 1996. Toilets must be Environmental Protection Agency (EPA) WaterSense certified not to exceed 1.28 gallons per flush. Showerheads and faucets must also be EPA WaterSense certified. The high efficiency fixture rebate program provides rebates to single and multi-family residential properties of $50, $25 and $25 for toilets, faucets and showerheads, respectively. The senior high efficiency toilet rebate program implemented in 2016 provides up to $200 for the purchase and installation of one toilet or up to $300 for the purchase and installation of two high efficiency toilets to low income senior homeowners of the COUNTY. The commercial program provides $50 rebates on certified flushometer valve toilets and urinals to commercial, institutional and industrial restrooms such as airports, theaters, stadiums, schools and office buildings. The lodging program provides $50 toward the purchase and installation of certified high efficiency toilets for qualified hotels and motels.

To reduce outdoor water use, the COUNTY offers free landscape irrigation evaluations to single family homeowners and large property owners (i.e. condominium associations, commercial properties, etc.) that have an existing, functioning in-ground irrigation system in place. Rebates are available toward the purchase and installation of retrofits recommended in the evaluation. Single family property owners can receive rebates up to $500 each year for five years while large property owners can receive up to $2,850 per property. In addition, the COUNTY provides free smart controllers to qualified large property owners or a rebate toward the purchase of one.

In addition to the above BMPs, other water conservation efforts have been developed to assist WASD to reach its water saving goals. They include: 1) free showerhead exchanges – COUNTY residents can exchange their old water wasting showerhead for a new, high efficiency model; 2) free multi-family showerhead distribution – property owners and managers of multi-family residences constructed before 1996 are eligible for a free large volume showerhead distribution; 3) free lodging showerhead distribution – hotels and motels constructed prior to 1996 are eligible for a free large volume showerhead distribution; 4) water conservation kits – residents concerned about high water bills can obtain a free water conservation kit which includes a high efficiency showerhead, kitchen swivel faucet aerator, 1.0 gpm bathroom aerator and leak detection dye tablets.

In addition to the Plan, the COUNTY created a water use efficiency standards manual in January 2009, detailing specific code changes regarding high efficiency flow rate requirements for bathroom and kitchen fixtures. It provides guidance and recommendations with the intent of achieving maximum water savings in new residential and commercial developments in both incorporated and unincorporated areas of the COUNTY.

The COUNTY also continues to enforce the permanent landscape irrigation restrictions adopted and listed under Section 32-8.2 of the COUNTY code limiting landscape irrigation to

two days per week. A written advisory notice is sent to follow up on formal complaints that are received through either the COUNTY's 3-1-1 system or via a web-based e-mail system. The COUNTY is currently working with SFWMD to modify its irrigation ordinance to comply with SFWMD's model year-round irrigation rule.

The COUNTY has also enacted a tiered water rate structure which includes increasing water rates for higher water use to encourage conservation. Rates can be viewed at: https://www.miamidade.gov/global/water/rates.page.

Educational outreach is an important component of the COUNTY's water conservation efforts. During 2021, WASD participated in 11 outreach and education events providing information to residents about the region's water resources and the importance of conserving it. Participation in education outreach was curtailed this year due to COVID-19, so most of the events were held virtually. At in-person events, free giveaways are provided encouraging participants to learn about WASD's incentives (BMPs) to save water. Free reusable water bottles, chip clips, fans, shower timers, aerators (all with water conservation messaging) are an example of items provided. In addition, WASD partners with Dream in Green (DIG), a local not for profit environmental educational organization. DIG's Water + Energy + Learning + Behavior (WELAB) workshops educate residents about the importance of conserving water and energy and their inter-dependent relationship (water/energy nexus). Participants are provided a free toolkit including a high efficiency showerhead, lightbulb, reusable water bottle and shower timer contributed by WASD. In addition, WASD has conducted lightbulb and showerhead exchanges at Countywide outreach events prior to COVID-19 (i.e. Adopt a Tree events) to educate residents on the water/energy nexus connection. Residents can exchange up to three incandescent lightbulbs and two old showerheads for energy efficient Compact Fluorescent Lamp (CFLs) lightbulbs and high efficiency showerheads free of charge. It is anticipated these events will be held again in the near future post COVID-19.

Education outreach also includes WASD's annual *Every Drop Counts Poster Contest* which invites K-5th grade students to submit a poster conveying a water conservation theme. To incentivize participation, each child that submits a poster receives an *Every Drop Counts* t-shirt. Thirteen winners, one from each COUNTY commission district is selected and awarded gifts and prizes and invited to an awards ceremony at a Board of County Commission meeting for their efforts. This year's event (2021) drew 3,118 submittals from 68 schools located COUNTY wide. A calendar is created each year depicting the thirteen winner's posters conveying the message of water conservation and its importance to the COUNTY's water supply. Posters are displayed in the lobbies of the Stephen P. Clark Government Center and WASD's Douglas Road headquarters for public viewing. Visit https://www.miamidade.gov/global/water/conservation/kids-poster-contest.page to see the winning posters online.

During 2018, the Board of County Commissioners, considering climate change and rising sea levels, adopted a resolution recognizing the link between conserving water and preventing the advancement of saltwater intrusion into the Biscayne Aquifer, the COUNTY's primary source of drinking water. The resolution required the creation of education materials highlighting this link so residents can understand issues affecting the COUNTY, its water resources and how water conservation can lessen the effect. In addition, the COUNTY's Office of Resilience created a sea level rise story map at: https://mdc.maps.arcgis.com/apps/Cascade/index.html?appid=6ff1c86445114dc7b82e13b67b439093 which describes how water conservation can reduce the impact of sea level rise on the Biscayne Aquifer. The COUNTY has also developed a website that provides information

on water conservation.

Because of these efforts, as of December 31, 2021 the COUNTY is currently experiencing actual finished water demands of 327.02 MGD which is approx. 15 MGD lower than 2006 actual finished water demands of 341.58 MGD (as of 12/31/2006, the year prior to the implementation of the WUE Plan).

SECTION I - PLAN IMPLEMENTATION

BMPs implemented since the plan inception are shown in Appendix A with the COUNTY experiencing declining per capita water consumption. Figure 1 reflects the historical systemwide per capita, showing the effectiveness of WASD's water efficiency strategies. Please note that per capita calculations are revised each year based on current population data from the Miami-Dade COUNTY Planning Division of the Department of Regulatory and Economic Resources.

Figure 1. Miami Dade Water & Sewer Dept. Historical Systemwide Average Finished Water Per Capita

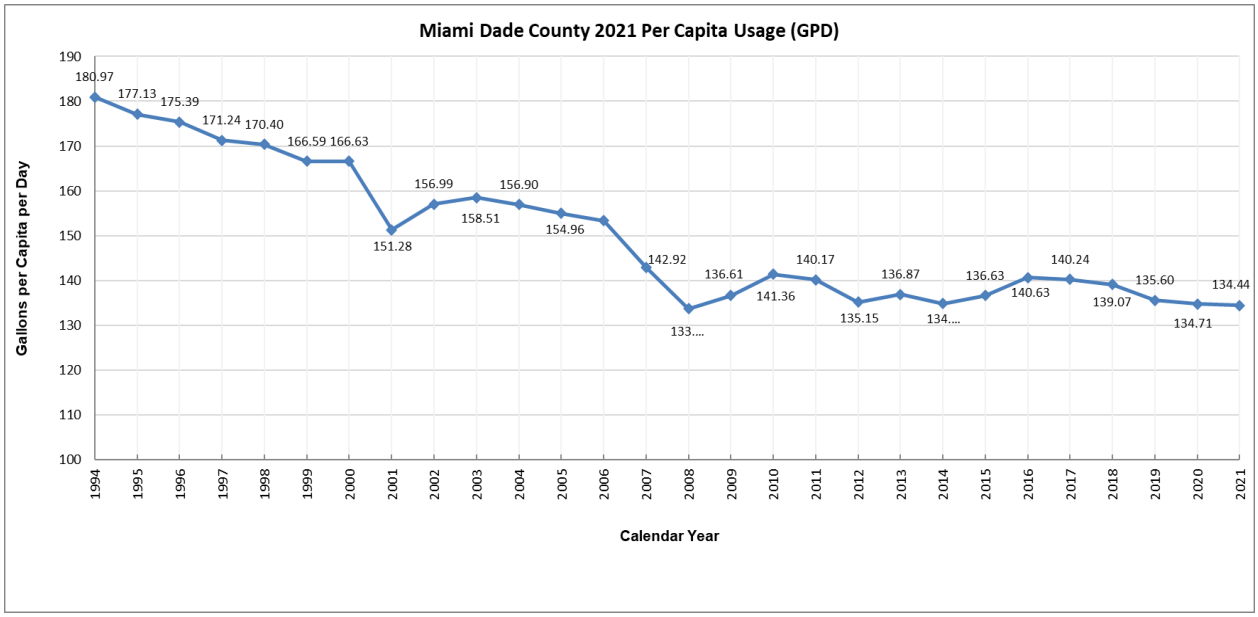


Table 1 shows both the estimated water savings achieved through implementation of the BMPs vs. annual planned goals for water savings. As of September 30, 2021, estimated water savings from implementation of BMPs are approx. 16.19 MGD, exceeding the water savings target set for that year of 15.67 MGD.

Table 1. Water Savings Report Summary

YEAR	CUMULATIVE WATER SAVINGS (MGD)		MGD SAVINGS/YR (fiscal year)
	Planned	Reported	
2007	1.09	1.21	
2008	2.24	3.48	2.26
2009	3.53	4.90	1.43
2010	4.82	6.54	1.64
2011	6.10	8.47	1.92
2012	7.22	10.07	1.61
2013	8.42	11.23	1.15
2014	9.54	12.34	1.12
2015	10.66	14.14	1.80
2016	11.70	15.05	0.91
2017	12.49	15.32	0.27
2018	13.28	15.51	0.19
2019	14.08	15.80	0.29
2020	14.87	15.94	0.14
2021	15.67	16.19	0.25

APPENDIX A - BMP IMPLEMENTATION THROUGH DECEMBER 31, 2021

BMP: Residential High Efficiency Toilet (HET) Rebate
Cost: $50/rebate

Year		Units	Savings/Account gallons per account per day	Total Savings (gal/day)
2007	Planned	750	29	21,750
	Reported	971	29	28,159
	Difference	221		6,409
2008	Planned	750	29	21,750
	Reported	1253	29	36,337
	Difference	503		14,587
2009	Planned	1000	29	29,000
	Reported	3478	29	100,862
	Difference	2478		71,862
2010	Planned	2000	29	58,000
	Reported	2622	29	76,038
	Difference	622		18,038
2011	Planned	2000	29	58,000
	Reported	2566	29	74,414
	Difference	566		16,414
2012	Planned	1200	29	34,800
	Reported	1220	29	35,380
	Difference	20		580
2013	Planned	1500	29	43,500
	Reported	1547	29	44,863
	Difference	47		1,363
2014	Planned	1500	29	43,500
	Reported	1558	29	45,182
	Difference	58		1,682
2015	Planned	1450	29	42,050
	Reported	1887	29	54,723
	Difference	437		12,673

2016	Planned	1450	29	42,050
	Reported	1772	29	51,388
	Difference	322		9,338
2017	Planned	2400	29	69,600
	Reported	1469	29	42,601
	Difference	-931		-26,999
2018	Planned	1500	29	43,500
	Reported	1466	29	42,514
	Difference	-34		-986
2019	Planned	1,380	29	40,020
	Reported	1,898	29	55,042
	Difference	518		15,022
2020	Planned	1,480	29	42,920
	Reported	1,412	29	40,948
	Difference	-68		-1,972
2021	Planned	1660	29	48,140
	Reported	1175	29	34,075
	Difference	-485		-14,065

BMP: Multifamily High Efficiency Toilet (HET) Rebate
Cost: $50/rebate[1]

Year		Units	Savings/Unit Gallons per multi-family unit per day	Total Savings (gal/day)
2007	Planned	0	64	0
	Reported	0	64	0
	Difference	0		
2008	Planned	0	64	0
	Reported	0	64	0
	Difference	0		
2009	Planned	310	64	19,840
	Reported	315	64	20,160
	Difference	5		320
2010	Planned	0	64	0
	Reported	0	64	0
	Difference	0		
2011	Planned	0	64	0
	Reported	0	64	0
	Difference	0		
2012	Planned	0	64	0
	Reported	0	64	0
	Difference	0		0
2013	Planned	0	64	0
	Reported	0	64	0
	Difference	0		0
2014	Planned	0	64	0
	Reported	0	64	0
	Difference	0		0
2015	Planned	80	29	2,320
	Reported	588	29	17,052
	Difference	508		14,732
2016	Planned	80	29	2,320

	Reported	519	29	15,051
	Difference	439		12,731
2017	Planned	120	29	3,480
	Reported	635	29	18,415
	Difference	515		14,935
2018	Planned	300	29	8,700
	Reported	235	29	6,815
	Difference	-65		-1,885
2019	Planned	180	29	5,220
	Reported	480	29	13,920
	Difference	300		8,700
2020	Planned	180	29	5,220
	Reported	120	29	3,480
	Difference	-60		-1,740
2021	Planned	180	29	5,220
	Reported	154	29	4,466
	Difference	-26		-754

[1]Incorrectly combined with Residential High Efficiency Toilet Rebates prior to 2015

BMP: Senior High Efficiency Toilet (HET) Rebate
Cost: $200 for purchase and installation of one toilet/$300 for purchase and installation of two toilets

Year		Units	Savings/Account gallons per account per day	Total Savings (gal/day)
2016	Planned	0	29	0
	Reported	41	29	1,189
	Difference	41		1,189
2017	Planned	480	29	13,920
	Reported	191	29	5,539
	Difference	-289		-8,381
2018	Planned	204	29	5,916
	Reported	120	29	3,480
	Difference	-84		-2,436
2019	Planned	120	29	3,480
	Reported	115	29	3,335
	Difference	-5		-145
2020	Planned	120	29	3,480
	Reported	56	29	1,624
	Difference	-64		-1,856
2021	Planned	120	29	3,480
	Reported	160	29	4,640
	Difference	40		1,160

BMP: Single Family High Efficiency Showerhead Rebate
Cost: $25/rebate[1]

Year		Units	Savings/Measure Gallons/Unit/Day	Total Savings Gallons Per Day (gal/day)
2007	Planned	0	35	0
	Reported	0	35	0
	Difference	0		0
2008	Planned	0	35	0
	Reported	0	35	0
	Difference	0	35	0
2009	Planned	0	35	0
	Reported	0	35	0
	Difference	0		0
2010	Planned	0	35	0
	Reported	0	35	0
	Difference	0		0
2011	Planned	0	35	0
	Reported	0	35	0
	Difference	0		0
2012	Planned	50	35	1750
	Reported	23	35	805
	Difference	-27		-945
2013	Planned	50	35	1750
	Reported	46	35	1610
	Difference	-4		-140
2014	Planned	0	35	0
	Reported	59	35	2,065
	Difference	59		2,065
2015	Planned	0	35	0
	Reported	167	35	5,845
	Difference	167		5,845

2016	Planned	0	35	0
	Reported	279	35	9,765
	Difference	279		9,660
2017	Planned	300	35	10,500
	Reported	317	35	11,095
	Difference	17		595
2018	Planned	300	35	10,500
	Reported	326	35	11,410
	Difference	26		910
2019	Planned	300	35	10,500
	Reported	440	35	15,400
	Difference	140		4,900
2020	Planned	350	35	12,250
	Reported	355	35	12,425
	Difference	5		175
2021	Planned	352	35	12,320
	Reported	366	35	12,810
	Difference	14		490

[1]Note: originally $10/rebate

BMP: Single Family High Efficiency Faucet Rebate
Cost: $25/rebate[1]

Year		Units	Savings/Measure Gallons/Unit/Day	Total Savings Gallons Per Day (gal/day)
2007	Planned	0	12	0
	Reported	0	12	0
	Difference	0		0
2008	Planned	0	12	0
	Reported	0	12	0
	Difference	0		0
2009	Planned	0	12	0
	Reported	0	12	0
	Difference	0		0
2010	Planned	0	12	0
	Reported	0	12	0
	Difference	0		0
2011	Planned	0	12	0
	Reported	0	12	0
	Difference	0		0
2012	Planned	50	12	600
	Reported	107	12	1284
	Difference	57		684
2013	Planned	50	12	600
	Reported	120	12	1440
	Difference	70		840
2014	Planned	0	12	0
	Reported	151	12	1,812
	Difference	151		1,812
2015	Planned	0	12	0
	Reported	433	12	5,196
	Difference	433		5,196

2016	Planned	0	12	0
	Reported	564	12	6,768
	Difference	564		6,768
2017	Planned	600	12	7,200
	Reported	584	12	7,008
	Difference	-16	12	-192
2018	Planned	600	12	7,200
	Reported	639	12	7,668
	Difference	-16	12	468
2019	Planned	600	12	7,200
	Reported	680	12	8,160
	Difference	80	12	960
2020	Planned	650	12	7,800
	Reported	614	12	7,368
	Difference	-36		-432
2021	Planned	650	12	7,800
	Reported	556	12	6,672
	Difference	-94		-1,128

[1]Note: originally $10/rebate

BMP: Large Property Landscape Irrigation Evaluation Rebate
Cost: $2,850/rebate

Year		Units	Savings/Account Gallons/account/day	Total Savings (gal/day)
2007	Planned	20	35,000	700,000
	Reported	20	35,000	700,000
	Difference	0		
2008	Planned	20	35,000	700,000
	Reported	50	35,000	1,750,000
	Difference	30		1,050,000
2009	Planned	20	35,000	700,000
	Reported	25	35,000	875,000
	Difference	5		175,000
2010	Planned	25	35,000	875,000
	Reported	26	35,000	910,000
	Difference	1		35,000
2011	Planned	35	35,000	1,225,000
	Reported	44	35,000	1,540,000
	Difference	9		315,000
2012	Planned	25	35,000	875,000
	Reported	36	35,000	1,260,000
	Difference	11		385,000
2013	Planned	26	35,000	910,000
	Reported	28	35,000	980,000
	Difference	2		70,000
2014	Planned	27	35,000	945,000
	Reported	25	35,000	875,000
	Difference	-2		-70,000
2015	Planned	69	35,000	2,415,000
	Reported	42	35,000	1,470,000
	Difference	-27		-945,000
2016	Planned	69	various	-

	Reported	23	various	770,448
	Difference	-46		-
2017	Planned	24	various	33,600
	Reported	37	various	75,432
	Difference	13		41,832
2018	Planned	24	various	33,600
	Reported	38	various	61,054
	Difference	13		27,454
2019	Planned	30	various	42,000
	Reported	27	various	112,000
	Difference	-3		-70,000
2020	Planned	30	various	70,000
	Reported	39	various	139,426
	Difference	9		69,426
2021	Planned	45	various	130,000
	Reported	30	various	144,648
	Difference	-15		14,648

BMP: Single Family Home Landscape Irrigation Evaluation Rebate
Cost: $500/rebate

Year		Units	Savings/Account Gallons/account/day	Total Savings (gal/day)
2007	Planned	0	233	0
	Reported	0	233	0
	Difference	0		
2008	Planned	0	233	0
	Reported	0	233	0
	Difference	0		
2009	Planned	200	233	46,600
	Reported	200	233	46,600
	Difference	0		
2010	Planned	120	233	27,960
	Reported	131	233	30523
	Difference	11		2563
2011	Planned	120	233	27,960
	Reported	145	233	33,785
	Difference	25		5,825
2012	Planned	100	233	23,300
	Reported	81	233	18,873
	Difference	-19		-4427
2013	Planned	75	233	17,475
	Reported	58	233	13,514
	Difference	17		-3961
2014	Planned	75	233	17,475
	Reported	75	233	17,475
	Difference	17		0
2015	Planned	195	233	45,435
	Reported	84	233	19,572
	Difference	-111		-25,863

2016	Planned	195	233	45,435
	Reported	73	233	17,009
	Difference	-122		-28,426
2017	Planned	60	233	13,980
	Reported	84	233	19,572
	Difference	24		5,592
2018	Planned	72	233	16,776
	Reported	95	233	22,135
	Difference	24		5,359
2019	Planned	70	233	16,310
	Reported	113	233	26,329
	Difference	43		10,019
2020	Planned	90	233	20,970
	Reported	117	233	27,261
	Difference	27		6,291
2021	Planned	90	233	20,970
	Reported	144	233	33,552
	Difference	54		12,582

BMP: Single Family – High Efficiency Showerhead Exchange
Cost: $3.50/showerhead

Year		Units	Savings/Measure Gallons/measure/day	Total Savings (gal/day)
2007	Planned	1600	35	56,000
	Reported	4194	35	146,790
	Difference	2594		90,790
2008	Planned	1600	35	56,000
	Reported	2437	35	85,295
	Difference	837		29,295
2009	Planned	1480	35	51,800
	Reported	2163	35	75,705
	Difference	683		23,905
2010	Planned	1500	35	52,500
	Reported	1986	35	69,510
	Difference	486		17,010
2011	Planned	1500	35	52,500
	Reported	1936	35	67,760
	Difference	436		15,260
2012	Planned	1500	35	52,500
	Reported	3158	35	110,530
	Difference	1658		58,030
	Planned	1100	35	38,500
	Reported	1228	35	42,980
	Difference	128		4,480
	Planned	1500	35	52,500
2014	Reported	1991	35	69,685
	Difference	491		17,185
	Planned	1500	35	52,500
2015	Reported	2554	35	89,390
	Difference	1,054		36,890

2016	Planned	1500	35	52,500
	Reported	1463	35	51,205
	Difference	-37		-1,295
2017	Planned	900	35	31,500
	Reported	1121	35	39,235
	Difference	221		7,735
2018	Planned	1,104	35	38,640
	Reported	651	35	22,785
	Difference	-453		15,855
2019	Planned	800	35	28,000
	Reported	710	35	24,850
	Difference	-90		-3,150
2020	Planned	700	35	24,500
	Reported	445	35	15,575
	Difference	-255		-8,925
2021	Planned	700	35	24,500
	Reported	162	35	5,670
	Difference	-538		-18,830

BMP: Multifamily – High Efficiency Showerhead Exchange
Cost: $3.50/showerhead

Year		Units	Savings/Measure Gallons/Unit/Day	Total Savings Gallons Per Day (gal/day)
2007	Planned	1600	35	56,000
	Reported	4193	35	146,755
	Difference	2593		90,755
2008	Planned	1600	35	56,000
	Reported	4000	35	140,000
	Difference	2400	35	84,000
2009	Planned	2120	35	74,200
	Reported	2130	35	74,550
	Difference	10		350
2010	Planned	5000	35	175,000
	Reported	6519	35	228,165
	Difference	3485		53,165
2011	Planned	2500	35	87,500
	Reported	2857	35	99,995
	Difference	357		12,495
2012	Planned	2000	35	70,000
	Reported	2163	35	75,705
	Difference	163		5,705
2013	Planned	800	35	28,000
	Reported	814	35	28,490
	Difference	14		490
2014	Planned	1000	35	35,000
	Reported	1167	35	40,845
	Difference	67		5,845
2015	Planned	1000	35	35,000
	Reported	0	35	0
	Difference	-1000		-35,000

2016	Planned	2003	35	70,105
	Reported	77	35	2,695
	Difference	-1,926		-67,410
2017	Planned	300	35	10,500
	Reported	1066	35	37,310
	Difference	766		26,810
2018	Planned	804	35	28,140
	Reported	2	35	70
	Difference	-802		-28,070
2019	Planned	100	35	3,500
	Reported	0	35	0
	Difference	-100		-3,500
	Reported	0	35	0
	Difference	0		0
2020		N/A		N/A
2021		N/A		N/A

BMP: Single Family High Efficiency Retrofit Kit (includes bathroom and kitchen faucet aerators and dye tablets)
Cost: $5/kit

Year		Units	Savings/Measure Gallons/measure/day	Total Savings (gal/day)
2007	Planned	1600	12	19,200
	Reported	4194	12	50,328
	Difference	2594		31,128
2008	Planned	1600	12	19,200
	Reported	2437	12	29,244
	Difference	837		10,044
2009	Planned	1480	12	17,760
	Reported	1498	12	17,976
	Difference	18		216
2010	Planned	1000	12	12,000
	Reported	1321	12	15,852
	Difference	321		3,852
2011	Planned	1000	12	12,000
	Reported	1417	12	17,004
	Difference	417		5,004
2012	Planned	1000	12	12,000
	Reported	2576	12	30,912
	Difference	1576		18,912
2013	Planned	800	24	9,600
	Reported	890	24	10,680
	Difference	90		1,080
2014	Planned	1000	24	24,000
	Reported	1893	24	45,432
	Difference	893		21,432
2015	Planned	1000	24	24,000
	Reported	1345	24	32,280
	Difference	345		8,280

2016	Planned	1000	24	24,000
	Reported	160	24	3,840
	Difference	-840		-20,160
2017	Planned	0	24	0
	Reported	0	24	0
	Difference	0		0
2018		N/A		N/A
2019		N/A		N/A
2020		N/A		N/A
2021		N/A		N/A

BMP: Multifamily High Efficiency Retrofit Kit (includes bathroom and kitchen faucet aerators and dye tablets)
Cost: $5/kit

Year		Units	Savings/Measure Gallons/measure/day	Total Savings (gal/day)
2007	Planned	1600	12	19,200
	Reported	4193	12	50,316
	Difference	2593		31,116
2008	Planned	1600	12	19,200
	Reported	4000	12	48,000
	Difference	2400		28,800
2009	Planned	2120	12	25,440
	Reported	2130	12	25,560
	Difference	10		120
2010	Planned	2600	12	31,200
	Reported	5657	12	67,884
	Difference	3057		36,684
2011	Planned	2000	12	24,000
	Reported	2618	12	31,416
	Difference	618		7,416
2012	Planned	1500	12	18,000
	Reported	1567	12	18,804
	Difference	67		804
2013	Planned	500	24	12,000
	Reported	662	24	15,888
	Difference	162		3,888
2014	Planned	750	24	18,000
	Reported	576	24	13,824
	Difference	-174		-4,176
2015	Planned	750	24	18,000
	Reported	0	24	0
	Difference	-750		-18,000

2016	Planned	1,250	24	30,000
	Reported	9	24	8,640
	Difference	-1,241		-29,784
2017	Planned	0	24	0
	Reported	0	24	0
	Difference	0		0
2018		N/A		N/A
2019		N/A		N/A
2020		N/A		N/A
2021		N/A		N/A

BMP: Single Family Senior and Low-Income High Efficiency Toilet & Retrofit Kit*
Cost: N/A

Year		Units	Savings/Account (Address) Gallons/account/day	Total Savings (gal/day)
2007	Planned	750	64	48,000
	Reported	890	64	56,960
	Difference	140		8,960
2008	Planned	1000	64	64,000
	Reported	1124	64	71,936
	Difference	124		7,936
2009	Planned	1000	64	64,000
	Reported	1000	64	64,000
	Difference	0		
2010	Planned	1000	64	64,000
	Reported	845*	64	54,080
	Difference	-155		-9,920
2011	Planned	750	64	48,000
	Reported	706	64	45,184
	Difference	44		-2,816
2012	Planned	750	64	48,000
	Reported	463	64	29,632
	Difference	-287		-18,368
2013		N/A		N/A
2014		N/A		N/A
2015		N/A		N/A
2016		N/A		N/A
2017		N/A		N/A
2018		N/A		N/A
2019		N/A		N/A
2020		N/A		N/A
2021		N/A		N/A

*Note: Reported Value is for each address where retrofit occurred. A retrofit consists of 2 HETs, 2 showerheads, 2-bathroom faucet aerators and kitchen aerator. Program ended October 2012

BMP: Single Family High Efficiency Clothes Washer Rebates
Cost: N/A
Note: Program ended October 2009

Year		Units	Savings/Measure gallon/measure/day	Total Savings (gal/day)
2007	Planned	0	16.3	0
	Reported	0	16.3	0
	Difference	0		
2008	Planned	150	16.3	2,445
	Reported	849	16.3	13,838.7
	Difference	699		11,393.7
2009	Planned	250	16.3	4,075
	Reported	937	16.3	15,273.1
	Difference	687		11,198.1
2010		N/A		N/A
2011		N/A		N/A
2012		N/A		N/A
2013		N/A		N/A
2014		N/A		N/A
2015		N/A		N/A
2016		N/A		N/A
2017		N/A		N/A
2018		N/A		N/A
2019		N/A		N/A
2020		N/A		N/A
2021		N/A		N/A

BMP: Non-Residential High Efficiency Aerators (Industrial, Commercial and Institutional (ICI))
Cost: $0.50/aerator

2014	Planned	0	12	0
	Reported	205	12	2,460
	Difference	205		2,460
2015	Planned	0	12	0
	Reported	0	12	0
	Difference	0		0
2016	Planned	0	12	0
	Reported	0	12	0
	Difference	0		0
2017	Planned	0	12	0
	Reported	0	12	0
	Difference	0		0
2018	Planned	0	12	0
	Reported	85	12	1,020
	Difference	85		1,020
2019	Planned	0	12	0
	Reported	114	12	1,368
	Difference	114		1,368
2020		N/A		N/A
2021	Planned	100	12	1,200
	Reported	0	12	0
	Difference	-100		-1,200

BMP: Non-Residential COUNTY Owned Facilities Landscape Irrigation Evaluation (no rebate)
Cost: $250/evaluation

Year		Units	Savings/Measure Gallons/measure/day	Total Savings (gal/day)
2007	Planned	22	1,500	33,000
	Reported	22	1,500	33,000
	Difference	0		
2008	Planned	10	1,500	15,000
	Reported	38	1,500	57,000
	Difference	28		42,000
2009	Planned	0	1,500	0
	Reported	0	1,500	0
	Difference	0		
2010	Planned	0	1,500	0
	Reported	3	1,500	4500
	Difference	3		4500
2011	Planned	10	1,500	15000
	Reported	7	1,500	10,500
	Difference	3		-4,500
2012	Planned	0	1500	0
	Reported	16	1500	24,000
	Difference	16		24,000
2013	Planned	0	1500	0
	Reported	0	1500	0
	Difference			
2014	Planned	0	1500	0
	Reported	1	1500	1500
	Difference	1		1500
2015	Planned	0	1500	0
	Reported	0	1500	0
	Difference	0		0

2016	Planned	0	1500	0
	Reported	0	1500	0
	Difference	0		0
2017	Planned	0	1500	0
	Reported	0	1500	0
	Difference	0		0
2018	Planned	N/A		N/A
2019	Reported	N/A		N/A
2020	Difference	N/A		N/A
2021	Difference	N/A		N/A

BMP: Non-Residential Green Restaurant Evaluation (no rebate)
Cost: $250/evaluation

Year		Units	Savings/Measure Gallons/measure/day	Total Savings (gal/day)
2007	Planned	0	100	0
	Reported	0	100	0
	Difference	0		
2008	Planned	12	100	1,200
	Reported	14	100	1,400
	Difference	2		200
2009	Planned	12	100	1,200
	Reported	12	100	1,200
	Difference	0		
2010	Planned	12	100	1,200
	Reported	11	100	1,100
	Difference	-1		-100
2011	Planned	0	100	0
	Reported	0	100	0
	Difference	0		
2012	Planned	0	100	0
	Reported	0	100	0
	Difference	0		
2013	Planned	0	100	0
	Reported	0	100	0
	Difference	0		
2014	Planned	0	100	0
	Reported	9	100	900
	Difference	0		900
2015	Planned	0	100	0
	Reported	0	100	0
	Difference	0		0

2016	Planned	0	100	0
	Reported	0	100	0
	Difference	0		0
2017	Planned	0	100	0
	Reported	0	100	0
	Difference	0		0
2018	N/A			N/A
2019	N/A			N/A
2020	N/A			N/A
2021	N/A			N/A

BMP: Non-Residential Green Lodging Evaluation no rebates
Cost: $250/evaluation

Year		Units	Savings/Measure gallons/measure/day	Total Savings (gal/day)
2007	Planned	0	1,617	0
	Reported	0	1,617	0
	Difference	0		
2008	Planned	12	1,617	19,404
	Reported	17	1,617	27,489
	Difference	5		8,085
2009	Planned	12	1,617	19,404
	Reported	21	1,617	33,957
	Difference	9		14,553
2010	Planned	0	1,617	0
	Reported	4	1,617	6,468
	Difference	4		6,468
2011	Planned	0	1,617	0
	Reported	3	1,617	4,851
	Difference	3		4,851
2012	Planned	0	1,617	0
	Reported	2	1,617	3234
	Difference	2		3234
2013	Planned	0	1,617	0
	Reported	1	1,617	1,617
	Difference	1		1,617
2014	Planned	0	1,617	0
	Reported	1	1,617	1,617
	Difference	1		1,617
2015	Planned	1	1,617	1,617
	Reported	80	1,617	129,360
	Difference	79		127,743

2016	Planned	0	1,617	0
	Reported	0	1,617	0
	Difference	0		0
2017	Planned	0	1,617	0
	Reported	0	1,617	0
	Difference	0		0
2018	N/A			N/A
2019	N/A			N/A
2020	N/A			N/A
2021	N/A			N/A

BMP: Non-Residential Industrial, Commercial and Institutional (ICI) Water-Use Evaluation/Implementation
Cost: N/A before 2017; $50 per toilet 2017 and after

Year		Units	Savings/Measure (gpmd)	Total Savings (gal/day)
2007	Planned	22	1,500	33,000
	Reported	22	1,500	33,000
	Difference	0		
2008	Planned	10	1,500	15,000
	Reported	38	1,500	57,000
	Difference	28		42,000
2009	Planned	0	1,500	0
	Reported	0	1,500	0
	Difference	0		
2010	Planned	0	1,500	0
	Reported	0	1,500	0
	Difference	0		
2011	Planned	0	1,500	0
	Reported	0	1,500	0
	Difference	0		
2012	Planned	0	1,500	0
	Reported	0	1,500	0
	Difference	0		
2013	Planned	0	1,500	0
	Reported	0	1,500	0
	Difference	0		
2014	Planned	0	1,500	0
	Reported	0	1,500	0
	Difference	0		0
2015	Planned	0	1,500	0
	Reported	0	1,500	0
	Difference	0		0

2016	Planned	0	1,500	0
	Reported	0	1,500	0
	Difference	0		0
2017	Planned	0	29	0
	Reported	81	29	2,349
	Difference	81		2,349
2018	Planned	0	29	0
	Reported	274	29	7,946
	Difference	274		7,946
2019	Planned	220	29	6,380
	Reported	467	29	13,543
	Difference	247		7,163
2020	Planned	220	29	6,380
	Reported	11	29	319
	Difference	-209		-6,061
2021	Planned	220	29	6,380
	Reported	11	29	319
	Difference	-209		-6,061

APPENDIX G

Public Water Systems

Appendix G - Florida Department of Environmental Protection (Delegated to FDOH)

Public Water Systems - Population served greater than 25

PWS ID	Mailing Name	Mailing Street1	City	PWS Type	
4130077	BAL HARBOUR VILLAGE	655 96TH ST	BAL HARBOUR	C (COMMUNITY PWS)	CONSECUTIVE SYSTEM, NO WELLS
4130089	BAY HARBOR ISLANDS TOWN OF	9665 BAY HARBOR TERRACE	BAY HARBOR ISLANDS	C (COMMUNITY PWS)	CONSECUTIVE SYSTEM, NO WELLS
4130255	FLORIDA CITY	461 NW 6 AVENUE	FLORIDA CITY	C (COMMUNITY PWS)	WITH WELLS
4130588	REDLANDS MOBILE HOME PARK	17360 S.W. 232 STREET	MIAMI	C (COMMUNITY PWS)	WITH WELLS
4130604	HIALEAH CITY OF	3700 W 4TH AVE	HIALEAH	C (COMMUNITY PWS)	WITH WELLS
4130645	HOMESTEAD CITY OF	505 NW 9 ST. EMERGENCY: 305-247-4116	HOMESTEAD	C (COMMUNITY PWS)	WITH WELLS
4130662	INDIAN CREEK VILLAGE	50 INDIAN CREEK DRIVE	MIAMI BEACH	C (COMMUNITY PWS)	CONSECUTIVE SYSTEM, NO WELLS
4130833	JONES' TRAILER PARK	14601 NW 185TH STREET #11	MIAMI	C (COMMUNITY PWS)	WITH WELLS
4130871	MDWASA - MAIN SYSTEM	3071 SW 38 AVENUE	MIAMI	C (COMMUNITY PWS)	WITH WELLS
4130901	MIAMI BEACH CITY OF	1700 CONVENTION CENTER DR.	MIAMI BEACH	C (COMMUNITY PWS)	CONSECUTIVE SYSTEM, NO WELLS
4130970	NORTH BAY VILLAGE CITY OF	1666 KENNEDY DRIVE	NORTH BAY VILLAGE	C (COMMUNITY PWS)	CONSECUTIVE SYSTEM, NO WELLS
4130977	NORTH MIAMI CITY OF	12098 NW 11 AVE (PLANT)	NORTH MIAMI	C (COMMUNITY PWS)	WITH WELLS
4131001	OPA LOCKA CITY OF	1021 BURLINGTON ST	OPA LOCKA	C (COMMUNITY PWS)	CONSECUTIVE SYSTEM, NO WELLS
4131202	MDWASA/REX UTILITIES	P.O. BOX 316	MIAMI	C (COMMUNITY PWS)	WITH WELLS
4131206	REX UTILITIES INC/REDAVO	15225 SW HARDING LANE	HOMESTEAD	C (COMMUNITY PWS)	CONSECUTIVE SYSTEM, NO WELLS
4131312	SILVER PALM MOBILE HOMES	17350 SW 232 STREET	MIAMI	C (COMMUNITY PWS)	WITH WELLS
4131403	AMERICANA VILLAGE	19800 SW 180 AVE. #602	MIAMI	C (COMMUNITY PWS)	WITH WELLS
4131424	SURFSIDE TOWN OF	9293 HARDING AVE	SURFSIDE	C (COMMUNITY PWS)	CONSECUTIVE SYSTEM, NO WELLS
4131474	MEDLEY WATER DEPARTMENT	7777 NW 72 AVE	MEDLEY	C (COMMUNITY PWS)	CONSECUTIVE SYSTEM, NO WELLS
4131531	VIRGINIA GARDENS VILLAGE OF	6498 NW 38 TERRACE	VIRGINIA GARDENS	C (COMMUNITY PWS)	CONSECUTIVE SYSTEM, NO WELLS
4131558	WEST MIAMI CITY OF	901 SW 62ND AVE	WEST MIAMI	C (COMMUNITY PWS)	CONSECUTIVE SYSTEM, NO WELLS
4131618	NORTH MIAMI BEACH	19150 NW 8 AVENUE	NORTH MIAMI BEACH	C (COMMUNITY PWS)	WITH WELLS
4134357	FKAA J. ROBERT DEAN W.T.P.	19201 SW 354 ST	FLORIDA CITY	C (COMMUNITY PWS)	WITH WELLS
4134365	HIALEAH GARDENS	13601 NW 107 AVE	HIALEAH GARDENS	C (COMMUNITY PWS)	CONSECUTIVE SYSTEM, NO WELLS
4130048	LAS MERCEDES ENTERPRISE INC.	15730 SW 232 STREET	MIAMI	N (TRANSIENT PWS)	WELL
4130053	OLD CUTLER BAIT AND TACKLE	20264 OLD CUTLER ROAD	MIAMI	N (TRANSIENT PWS)	WELL
4130112	BENSON LIGHTING	12955 SW 87 AVE	MIAMI	N (TRANSIENT PWS)	WELL
4130159	BROOKS (J R) & SON	18400-50 SW 256 STREET	HOMESTEAD	N (TRANSIENT PWS)	WELL
4130320	CAMP OWAISSA BAUER	17001 SW 264 STREET	HOMESTEAD	N (TRANSIENT PWS)	WELL
4130496	FRANKSHER BUILDING	9300 SOUTH DIXIE HIGHWAY	MIAMI	N (TRANSIENT PWS)	WELL
4130721	MIAMI EVERGLADES CAMPGROUND	20675 SW 162 AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4130793	DELUXE MOTEL	28475 SOUTH DIXIE HIGHWAY	HOMESTEAD	N (TRANSIENT PWS)	WELL
4130891	ROBERTS AIR	28701 SW 219 AVENUE	HOMESTEAD	N (TRANSIENT PWS)	WELL
4130893	DADE HOMESTEAD GAA - ADMIN.	28700 SW 217TH AVENUE	HOMESTEAD	N (TRANSIENT PWS)	WELL
4130894	DADE HOMESTEAD GAA SKYDIVE	28700 SW 217 AVENUE	HOMESTEAD	N (TRANSIENT PWS)	WELL
4130897	DADE LANDSCAPE NURSERY	22200 SW 137 AVENUE HOMESTEAD FL 33031	MIAMI	N (TRANSIENT PWS)	WELL
4130900	HOMESTEAD EXECUTIVE JET CENTER	28700 SW 217 AVENUE	HOMESTEAD	N (TRANSIENT PWS)	WELL
4130933	MONKEY JUNGLE	14805 SW 216 ST	MIAMI	N (TRANSIENT PWS)	WELL
4130951	LAST CHANCE LOUNGE	35800 SOUTH DIXIE HIGHWAY	FLORIDA CITY	N (TRANSIENT PWS)	WELL
4131185	LA MISION HOSTEL AND LODGE	22540 S.W. 177 AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4131192	REDLAND GOLF & COUNTRY CLUB	24451 SW 177 AVENUE	HOMESTEAD	N (TRANSIENT PWS)	WELL
4131313	SILVER PALMS METHODIST CHURCH	15855 SOUTHWEST 248 STREET	HOMESTEAD	N (TRANSIENT PWS)	WELL
4131923	BISC NATL PK-ELLIOTT KEY	9700 SW 328 STREET	HOMESTEAD	N (TRANSIENT PWS)	WELL
4131961	REDLAND FRUIT AND SPICE PARK	24801 SW 187TH AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4131962	CASTELLOW HAMMOCK PARK	22301 SW 162 AVE	MIAMI	N (TRANSIENT PWS)	WELL

Appendix G - Florida Department of Environmental Protection (Delegated to FDOH)

Public Water Systems - Population served greater than 25

PWS ID	Mailing Name	Mailing Street1	City	PWS Type	
4134228	CHEVRON 24800	24800 SW 177 AVE.	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134234	CEMEX MATERIALS - SWEETWATER	1200 N.W. 137TH AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4134239	EXPREZO (STOP N' SHOP)	24791 SW 177 AVENUE	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134301	IGLESIA BUEN SAMARITANO	25795 SW 137 AVE	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134328	DIAMOND R. FERTILIZER	18375 SW 260 ST	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134334	COSTA PREMIERE (NURSERY II)	18201 SW 216 ST	MIAMI	N (TRANSIENT PWS)	WELL
4134338	BENITO JUAREZ PARK	19825 SW 376 STREET	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134363	HOMESTEAD JEHOVAH'S WITNESS	18505 SW 288 STREET	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134370	EVERGLADES PK-HIDDEN LK	PO BOX 279	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134372	EVERGLADES PK-LONG PINE KEY	40000 SR 9336	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134373	EVERGLADES NATIONAL PARK BILL ROBERTSON	40000 S.R. 9336	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134374	EVERGLADES PK-ROYAL PALM	40000 S.R. 9336	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134376	EVERGLADES SHARK VALLEY	40000 SR 9336	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134382	BUTLER'S NURSERY	15870 SW 216 STREET	MIAMI	N (TRANSIENT PWS)	WELL
4134384	CAULEY SQUARE I	22400 OLD DIXIE HWY	MIAMI	N (TRANSIENT PWS)	WELL
4134387	RMC 4HH (COCONUT PALM TRADING)	24814 SW 177 AVENUE	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134388	BEEZ KWIK STOP	20090 SW 177 AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4134393	COOPERTOWN	22700 SW 8 ST	MIAMI	N (TRANSIENT PWS)	WELL
4134394	COSTA NURSERY	22290 SW 162 AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4134402	GREENLEAF NURSERY	19355 SW 304 STREET	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134404	GULFSTREAM TOMATO GROWERS	21150 SW 167 AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4134420	SAFARI RESTAURANT	26700 SW 8 ST	MIAMI	N (TRANSIENT PWS)	WELL
4134431	REDLAND MARATHON	14695 SW 216 STREET	MIAMI	N (TRANSIENT PWS)	WELL
4134434	COMMUNITY ASPHALT	14001 N.W. 186 STREET	HIALEAH	N (TRANSIENT PWS)	WELL
4134439	CEMEX-F.E.C. OFFICE	13292 NW 118 AVENUE	HIALEAH	N (TRANSIENT PWS)	WELL
4134442	REDLAND COMMUNITY CHURCH	14601 SW 248 ST.	MIAMI	N (TRANSIENT PWS)	WELL
4134443	COMCAST REDLANDS	20800 SW 167 AVE.	MIAMI	N (TRANSIENT PWS)	WELL
4134448	PALMS PROFESSIONAL CENTER	18430 S. DIXIE HWY.	MIAMI	N (TRANSIENT PWS)	WELL
4134451	FARM CREDIT	24700 SW 177 AVENUE	HOMESTEAD FL 33090	N (TRANSIENT PWS)	WELL
4134453	CEMEX-F.E.C. SHOP	12155 NW 136 STREET	HIALEAH	N (TRANSIENT PWS)	WELL
4134459	CIRCLE D FARMS	32700 SW 217 AVENUE	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134462	REDLANDS GROCERY	26400 SW 187 AVENUE	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134468	U-HAUL RENTAL & SERVICES	16500 SO. DIXIE HIGHWAY	MIAMI	N (TRANSIENT PWS)	WELL
4134499	OUR LADY OF MERCY CEMETERY ADM.	11411 NW 25 STREET	DORAL	N (TRANSIENT PWS)	WELL
4134506	CHRIST FELLOWSHIP	16390 SW 248 STREET	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134512	DE LEON BROMELIADS	13745 S.W. 216TH ST.	MIAMI	N (TRANSIENT PWS)	WELL
4134516	TOM THUMB 127	18400 SW 177 AVENUE MIAMI 33187	HIALEAH	N (TRANSIENT PWS)	WELL
4134520	RANCHO GASPAR	16480 NW 117 AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4134522	1ST BAPTIST CHURCH OF HOMESTEAD	29050 KROME AVE. MAIL: POBOX 900428	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134523	WOMEN'S CLUB OF HOMESTEAD	17905 SW 292 STREET	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134524	KROME AVENUE CHURCH	22755 SW 177 AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4134525	RINKER HYDRO-CONDUIT	13100 NW 118TH AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4134527	CEMEX EMPLOYEES	12150 NW 136 ST	MIAMI	N (TRANSIENT PWS)	WELL
4134528	EL GALLO AZUL	16751 KROME AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4134531	TOM THUMB 131	24790 SW 177 AVE	HOMESTEAD	N (TRANSIENT PWS)	WELL

Appendix G - Florida Department of Environmental Protection (Delegated to FDOH)

Public Water Systems - Population served greater than 25

PWS ID	Mailing Name	Mailing Street1	City	PWS Type	
4134532	SUNOCO KROME	26400 SW 177 AVE	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134533	GATOR PARK	24050 SW 8 STREET	MIAMI	N (TRANSIENT PWS)	WELL
4134537	MANNHEIMER FOUNDATION	20255 SW 360 STREET	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134540	FOOD EXPRESS	23150 SW 177 AVE	MIAMI	N (TRANSIENT PWS)	WELL
4134542	REDLAND PLAZA SHOPPING CENTER	19130 SW 177 AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4134543	SCHNEBLY WINERY	30205 SW 217 AVENUE	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134547	GLASER FARMS	19100 SW 137 AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4134549	ROBERT IS HERE	19200 SW 344 STREET	FLORIDA CITY	N (TRANSIENT PWS)	WELL
4134551	TROPICAL VILLAGE FARM	22601 SW 177 AVE	MIAMI	N (TRANSIENT PWS)	WELL
4134552	JALARAM PRODUCE	18850 SW 360 STREET	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134553	COSTA FARMS ORCHID HOUSE	24000 SW 162 AVENUE	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134554	FARMER'S MARKET SAN GERMAN	17800 SW 100 ST	MIAMI	N (TRANSIENT PWS)	WELL
4134555	ASCENCION ONE	11411 NW 25 STREET	DORAL	N (TRANSIENT PWS)	WELL
4134556	EVERGLADES GATOR GRILL	36600 SW 192 AVENUE	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134557	OUR LADY OF MERCY MAUSOLEUM	11411 NW 25 STREET	DORAL	N (TRANSIENT PWS)	WELL
4134558	OUR LADY OF MERCY CHAPEL	11411 NW 25 STREET	DORAL	N (TRANSIENT PWS)	WELL
4134560	CAULEY SQUARE II	22400 OLD DIXIE HWY	MIAMI	N (TRANSIENT PWS)	WELL
4134563	VALUE PAWN AND JEWELRY	18494 SOUTH DIXIE HWY	MIAMI	N (TRANSIENT PWS)	WELL
4134564	KROME BREWING	17480 SW 232 STREET	MIAMI	N (TRANSIENT PWS)	WELL
4134565	PINTO'S FARM	14890 SW 216 STREET	MIAMI	N (TRANSIENT PWS)	WELL
4134566	FARMERS MARKET FOOD 4 LESS	15390 SW 184 STREET	MIAMI	N (TRANSIENT PWS)	WELL
4134567	REDLAND RANCH INC.	14655 SW 232 STREET	MIAMI	N (TRANSIENT PWS)	WELL
4134569	FRUIT STAND BY BROTHERS	15515 SW 177 AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4134570	BERNECKER PACKING	16900 SW 216 STREET	MIAMI	N (TRANSIENT PWS)	WELL
4134571	COSTA MIKE COSTA	14201 SW 216 STREET	MIAMI	N (TRANSIENT PWS)	WELL
4134572	COSTA FARM FANCY FLORA	19950 SW 216 STREET	MIAMI	N (TRANSIENT PWS)	WELL
4134573	COSTA COLOR OFFICE	19595 SW 194 AVE	MIAMI	N (TRANSIENT PWS)	WELL
4134574	COSTA COLOR PACKING	19995 SW 194 AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4134575	COSTA COLOR PARKING	19995 SW 194 AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4134576	COSTA FARM GEERLING'S	19901 SW 248 STREET	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134577	COSTA FARM RIO	21840 SW 258 STREET	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134578	COSTA FARM SUNSHINE	17950 SW 264 STREET	HOMESTEAD	N (TRANSIENT PWS)	WELL
4134581	EVERGLADES ALLIGATOR FARM	40351 SW 192 AVENUE	FLORIDA CITY	N (TRANSIENT PWS)	WELL
4134582	FAMILY PAINTBALL CENTER	220 NW 137 AVENUE	MIAMI-DADE	N (TRANSIENT PWS)	WELL
4134583	M&M FARM	14945 SW 197 AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4134584	PURE BEAUTY FARMS	16350 SW 200 STREET MIAMI FL	MIAMI	N (TRANSIENT PWS)	WELL
4134588	NEPTUNE CIGARS	9308 SOUTH DIXIE HWY	MIAMI	N (TRANSIENT PWS)	WELL
4134589	THE LITTLE FARM.US	13401 SW 224 STREET	MIAMI	N (TRANSIENT PWS)	WELL
4134591	FARMHOUSE MIAMI	16901 SW 177 AVENUE	MIAMI-DADE	N (TRANSIENT PWS)	WELL
4134593	FARM STORE 1202	970 SW 87 AVENUE	MIAMI	N (TRANSIENT PWS)	WELL
4134594	FARM STORE 2406	12075 SOUTH DIXIE HWY	PINECREST	N (TRANSIENT PWS)	WELL
4134595	MOE'S TREEHOUSE CREAMERY	12375 SW 224 STREET UNIT B	MIAMI	N (TRANSIENT PWS)	WELL
4134596	HORSE COUNTRY FARMERS MARKET	12320 SW 56 STREET	MIAMI	N (TRANSIENT PWS)	WELL
4134597	AGUACATE LLC	12100 SW 43 STREET	MIAMI	N (TRANSIENT PWS)	WELL
4130322	REDLAND MIDDLE SCHOOL	16001 SW 248 ST	HOMESTEAD	P (NON TRANSIENT PWS)	WELL

Appendix G - Florida Department of Environmental Protection (Delegated to FDOH)

Public Water Systems - Population served greater than 25

PWS ID	Mailing Name	Mailing Street1	City	PWS Type	
4130445	TROPICAL RESEARCH & EDUCATION CENTER	18905 SW 280 STREET	HOMESTEAD	P (NON TRANSIENT PWS)	WELL
4130934	KINGSWOOD MONTESSORI ACADEMY INC.	20130 SW 304 ST	HOMESTEAD	P (NON TRANSIENT PWS)	WELL
4131631	HOMESTEAD AIR FORCE BASE	31 CES/DEMW WATER PLANT	HOMESTEAD	P (NON TRANSIENT PWS)	CONSECUTIVE SYSTEM, NO WELLS
4131958	SUNRISE COMMUNITY	22300 S.W. 162 AVENUE	MIAMI	P (NON TRANSIENT PWS)	WELL
4134300	REDLAND CHRISTIAN ACADEMY	17700 SW 280 ST	HOMESTEAD	P (NON TRANSIENT PWS)	WELL
4134368	EVERGLADES PK-PINE ISLAND	40000 SR 9336	HOMESTEAD	P (NON TRANSIENT PWS)	WELL
4134369	EVERGLADES PK-HEADQTRS	40000 SR 9336	HOMESTEAD	P (NON TRANSIENT PWS)	WELL
4134371	EVERGLADES PK-DAN BEARD	40000 S.R. 9336	HOMESTEAD	P (NON TRANSIENT PWS)	WELL
4134465	SUNRISE ADULT SERVICES (29800)	29800 OLD DIXIE HWY	HOMESTEAD	P (NON TRANSIENT PWS)	WELL
4134498	CREATIVE YEARS	15680 SW 232 STREET	MIAMI	P (NON TRANSIENT PWS)	WELL
4134502	LIFE POINTE CHURCH	27550 OLD DIXIE HIGHWAY	HOMESTEAD	P (NON TRANSIENT PWS)	WELL
4134513	MIAMI INTL AIRPORT	P.O. BOX 592075	MIAMI	P (NON TRANSIENT PWS)	CONSECUTIVE SYSTEM, NO WELLS
4134546	MY LITTLE ANGELS DAYCARE	29400 OLD DIXIE HWY	HOMESTEAD	P (NON TRANSIENT PWS)	WELL
4134562	COSTA FARMS	21800 SW 162 AVENUE	MIAMI	P (NON TRANSIENT PWS)	WELL

Source: Florida Department of Health (FDOH), February 2020

Appendix G - Florida Department of Health
Public Water Systems - Population served less than 25

PERMIT NUMBER	COMPANY NAME	CLASSIFICATION	ADDRESS	ZIP
13-57-00001	Mary's Ranch	Commercial	16301 NW 122 Avenue	33016
13-57-00003	White Rock Quarries	Commercial	18300 NW 122 Avenue	33012
13-57-00005	Botanics Wholesale Inc	Commercial	31701 SW 194 Avenue	33030
13-57-00010	CEMEX Materials LLC	Commercial	13292 NW 118 Avenue	33178
13-57-00011	General Asphalt	Commercial	17200 NW 122 Avenue	33016
13-57-00020	C. J. Kettles	Community	11401 SW 232 Street	33170
13-57-00024	Kotecha Brothers LLC	Commercial	17425 SW 172 Street	33186
13-57-00029	Florida Concrete Products	Registered	15900 SW 408 Street	33034
13-57-00030	Homestead General Aviat	Registered	28000 SW 217 Avenue	33030
13-57-00032	Landrum's Flotation Tires/	Registered	26150 SW 183 Court	33031
13-57-00035	Landrum's Factory	Commercial	26200 SW 183 Court	33031
13-57-00039	Discount Auto Parts III	Registered	16600 S Dixie Highway	33157
13-57-00053	Royal Container Office	Registered	13850 NW 105 Avenue	33016
13-57-00054	Goulds Post Office	Registered	22350 Old Dixie Highway	33170
13-57-00057	Gros Appliance, CORP.	Registered	23095 S Dixie Highway	33032
13-57-00064	OKEECHOBEE RD/US 2	Commercial	P O Box 17870	33310
13-57-00071	Soroa Orchids Inc	Commercial	25750 SW 177 Avenue	33031
13-57-00082	Florida Concrete Products	Registered	15900 SW 408 Street	33034
13-57-00083	Robbie's Feed Supply Inc	Commercial	22390 SW 177 Avenue	33170
13-57-00089	Sunrise G/H 27	Community	19980 SW 286 Street	33030
13-57-00090	PMS/Federal Aviation Ad	Commercial	19200 SW 128 Street	33196
13-57-00102	Caballero Rivero Woodla	Commercial	US 27 NW 186 St	33186
13-57-00104	Sara's Home Care	Community	29100 SW 172nd Avenue	33030
13-57-00107	Iglesia Adventista Del Sep	Commercial	24000 SW 187 Avenue	33031
13-57-00112	Sturon INC.	Registered	15801 SW 216 Street	33170
13-57-00114	Wat Buddharangsi A	Registered	15200 SW 240 Street	33032
13-57-00115	Wat Buddharangsi B	Registered	15200 SW 240 Street	33032
13-57-00120	FDOT TURNPIKE TOLL B	Commercial	14300 NW Circa 114 Avenue	33016
13-57-00131	TILZER RETAIL CENTER	Registered	17528 S Dixie Highway	33157
13-57-00132	Redland Fire Station No 6	Commercial	17605 SW 248 Street	33170
13-57-00133	Ranger Construction Sout	Commercial	18600 NW 122 Avenue	33016
13-57-00135	Cemex-Krome Quarry	Commercial	8800 SW 177 Avenue	33173
13-57-00146	Seven-Up Snapple South	Commercial	5900 NW 72 Avenue	33126
13-57-00150	Manuel Diaz Farm	Commercial	26401 SW 107 Avenue	33032
13-57-00152	The Ticket Clinic	Registered	16590 S Dixie Highway	33157
13-57-00155	Leasa Industries	Registered	2450 NW 76 Street	33147
13-57-00157	CEMEX-Card Sound Dist.	Commercial	15900 SW 408 Street	33034
13-57-00160	Vulcan Materials Compan	Registered	13100 NW 41 Street	33182
13-57-00161	Vulcan Materials Compan	Registered	13100 NW 41 Street	33182
13-57-00162	Royal Container II	Registered	13850 NW 105 Avenue	33018
13-57-00165	KCAZ Acquisitions LLC -	Community	25511-13 SW 107 Court, Lot 1	33032
13-57-00167	Rolando M. Garcia 25501	Community	25501-03 SW 107 Court	33032
13-57-00171	Allapatah 25420	Community	25420-22 SW 107 Court	33032
13-57-00175	Aran 25401-03 SW 107 C	Community	25401-03 SW 107 Court	33032
13-57-00178	Kendall Properties 5800	Commercial	5800 SW 177 Avenue	33193
13-57-00179	Kendall Properties 5816	Registered	5814-16 SW 177 Avenue	33193
13-57-00180	Kendall Properties 5812	Registered	5810 SW 177 Avenue	33193
13-57-00181	Kendall Properties 5808	Commercial	5808 SW 177 Avenue	33193
13-57-00182	Kendall Properties 5806	Commercial	5806 SW 177 Avenue	33193
13-57-00183	Kendall Properties 5804	Registered	5804 SW 177 Avenue	33193
13-57-00184	Kendall Properties 5802	Registered	5802 SW 177 Avenue	33193
13-57-00187	M.C. Velar Construction	Commercial	13950 NW 107 Avenue	33018

Appendix G - Florida Department of Health
Public Water Systems - Population served less than 25

PERMIT NUMBER	COMPANY NAME	CLASSIFICATION	ADDRESS	ZIP
13-57-00188	Baer's Furniture	Commercial	7501 SW 100 Street	33156
13-57-953986	A & A Passion Fruit, LLC	Commercial	18601 SW 177 Avenue	33187
13-57-973911	Iglesia Bautista Manantial	Commercial	13155 SW 232 Street	33170
13-57-1077891	Julie Landin	Community	17301 SW 104 Avenue	33159
13-57-1097237	Homestead Pole Bean	Commercial	26000 S Dixie Highway	33032
13-57-1121077	Diamond R Fertilizer Co.,	Commercial	18375 SW 260 Street	33031
13-57-1286081	Delta Homestead C & D F	Commercial	11695 SW 328 Street	33032
13-57-1299789	First Grace Faith	Commercial	24637 SW 137 Avenue	33032
13-57-1363642	Okeechobee Barrier	Commercial	Okeechobee Florida Turnpike	33010
13-57-1386458	Expedito's ALF, Inc.	Community	18900 SW 197 Avenue	33187
13-57-1495044	Sweet Hope ALF	Community	13551 SW 208 Street	33177
13-57-1498913	Gregory Collins	Community	25430 SW 107 Court	33032
13-57-1517624	SEIS 21 LLC	Community	555-57 NW 94 Street	33150
13-57-1517628	Halley Engineering Contra	Commercial	13901 NW 118 Avenue	33178
13-57-1578252	Airboat Association Of Flo	Commercial	25400 SW 8 ST	33176
13-57-1582859	Florida Concrete Products	Registered	15900 SW 408 Street	33034
13-57-1585729	Culomar Mgt LLC	Community	10525-27 SW 77 Court	33156
13-57-1602174	Sylvia's Senior Home, Inc	Community	23025 SW 120 Avenue	33170
13-57-1639337	Halley Engineering Contra	Registered	13850 NW 118 Avenue	33178
13-57-1644631	Whispering Manes	Commercial	6105 SW 125 Avenue	33183
13-57-1644695	JVC Management Corp	Commercial	10350 NW 142 Street	33017
13-57-1647703	CEMEX Training Center	Commercial	13292 NW 118 Avenue	33178
13-57-1684977	ALF An Excellent Care	Community	16251 SW 248 Street	33031
13-57-1690908	Hacienda Los Robles	Community	19050 SW 194 Avenue	33187
13-57-1702044	Bernecker's Nursery	Commercial	16900 SW 216 Street	33170
13-57-1706434	Atlas Material Testing	Commercial	16100 SW 216 Street	33170
13-57-1725052	Sunrise Adult Group Hom	Community	15190 SW 272 Street	33170
13-57-1773297	29790 Old Dixie INC.	Commercial	29790 Old Dixie Highway	33031
13-57-1778469	La Finca ALF	Community	17705 SW 218 Street	33170
13-57-1781402	JR Home Ranch 1	Community	19651 SW 165 Avenue	33187
13-57-1800281	Curaleaf Florida LLC	Commercial	19000 SW 192 Street	33187
13-57-1815880	Pure Beauty Farms	Commercial	16350 SW 200 Street	33187
13-57-1825082	KSGNF, LLC	Commercial	35701 SW 202 Avenue	33034
13-57-1837580	Tropical Produce	Commercial	19855 SW 272 Street	33031
13-57-1889260	Sunrise Community Inc 19	Community	19335 SW 310 Street	33030
13-57-1917815	Owls In The Box, LLC	Commercial	17925 SW 208 Street	33187
13-57-1926736	Group Home Service, Inc	Community	14821 SW 202 Avenue	33196
13-57-1949623	Ozinga Vulcan	Commercial	2550 NW 117 Avenue	33182
13-57-1952980	Familia Rivero Nursery Se	Commercial	24394 SW 214 Place	33030
13-57-1953499	Pine Island Nursery	Commercial	16380 SW 192 Street	33187
13-57-2039910 (in progress)	Bills Nursery, INC.	Commercial	30010 SW 205 Avenue	33090
13-57-2040060 (in progress)	The Honey Green Villa	Community	20200 SW 198 Avenue	33187

Source: Florida Department of Health, February 2020.

DATA, INVENTORY, AND ANALYSIS

PURPOSE

The purpose of the Conservation Element is to promote the conservation, conscientious use, and protection of natural resources within the City of Doral. The objective of the Conservation Element Data, Inventory, and Analysis (DIA) Report is to document the conditions for various natural resources found within the city and identify key community priorities for conservation guidelines. ~~The DIA Report also examines the current and projected water needs for the community over the 10-year planning horizon to ensure adequate water supply is available to support future demands consistent with the Infrastructure Element. Together, this information serves as the foundation for goals, objectives, and policies prepared to guide future development within the City of Doral.~~

IDENTIFICATION & ANALYSIS OF NATURAL RESOURCES

~~Rule 9-J5.013(1)(a) of t~~The Florida Administrative Code (F.A.C.) requires that a local government inventory and analyze all natural resources found within its jurisdiction. This section identifies and analyzes water bodies, wetlands, ground waters, air and water quality, floodplains, commercially valuable mineral deposits, soil problems, vegetative communities, wildlife habitats, and endangered species found within the City. Physical natural resources are presented first, and then followed by the biological natural resources. Natural resources may include air, water, wetlands, uplands, groundwater, surface water bodies, floodplains, minerals, soil erosion, wildlife, and vegetative resources. These items are addressed in the following paragraphs.

CLIMATIC CONDITIONS

The most significant environmental element for the City of Doral and the entire Ssouth Florida region is the warm, sub-tropical climate. The climatic conditions in Doral and the surrounding areas play an important role in the overall environmental system of the area due to their effect on air and water resources. The subtropical marine climate is characterized by warm weather, usually abundant rainfall, and light but persistent winds. Another distinguishing attribute is the length of the rainy season, which in the sub-tropical marine climate lasts for five or six months.

- **Precipitation.** Water resources of S~~s~~outh Florida are dependent mostly upon the rainfall in that region. The water needs for the City of Doral and all of Miami-Dade County are almost solely dependent upon the rainfall amount occurring in the identified area. This precipitation supplies regional water resources and adequately recharges the Biscayne Aquifer. Annual rainfall in Miami-Dade County averages nearly 60 inches per year, with approximately 45 inches occurring during the summer months. Doral is projected to have approximately 56.2 inches of rainfall per year by 2050.

- **Temperature.** Seasonal temperature variations play an important role in the ecosystem by directly affecting the loss of water to the atmosphere through evaporation and transpiration. The yearly average temperature range is approximately 20 degrees Fahrenheit, from the high 60's during the winter to the mid 80's in the summer. Temperatures in the area of the City of Doral are generally moderated by trade winds.

- **Winds.** Winds play a significant role in the region's hydrologic process due to their influence on the rate of evaporation from surface waters, soils, and vegetation. Trade winds stabilize the temperature and humidity, allowing drier air to blow off the Atlantic Ocean from east to west. Area wind velocities in the City of Doral are generally characterized by light gusts, although high wind speeds occur with passing storms and frontal systems. Extreme high winds are associated with tropical storms and hurricanes. The annual hurricane season begins June 1 and lasts until November 30. During the summer and fall months, prevailing winds are usually from the east, with varying wind patterns during the remainder of the year.

SURFACE WATER QUALITY

Water resources within the City of Doral are generally the result of man-made drainage systems. The majority of the city is located within the C-6 Drainage Basin, comprised of canals, including the C-6 Canal ~~(see Map V-1)~~. These canals serve three primary functions:

- To provide drainage and flood protection for the C-6 Drainage Basin.
- To supply water to the drainage basin for irrigation.
- To maintain a groundwater table elevation near the lower reach of the C-6 Canal adequate to prevent saltwater intrusion to local groundwater.

In times of low natural flow, water is supplied to the C-6 Canal through the opening of weir structures upstream and closing of downstream weir structures.

Water quality data of the abovementioned canal is available through the Miami-Dade County Department of Environmental Resource Management (DERM). DERM has five surface water monitoring sites located within or near the City of Doral, depicted in Map 5.1, Map V-1. Surface water monitoring for the loads and concentrations of the 12 different indicator pollutants is measured at all five locations. These pollutants are identified under the United States Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) regulations and DERM's Planning Criteria and Procedures. The Water Quality Level of Service (WQLOS) component of the standard shall be met when the annual average for each of the following 12 priority indicator pollutants does not exceed the following target criteria. To remain in compliance, total phosphorus must not exceed 0.33 mg/l; Nitrate-Nitrite must not exceed 0.68 mg/l; Total suspended solids must not exceed 40 mg/l; and BOD5 must not exceed 9 mg/l.

MAP 5.1: MIAMI-DADE COUNTY SURFACE WATER QUALITY TESTING SITES

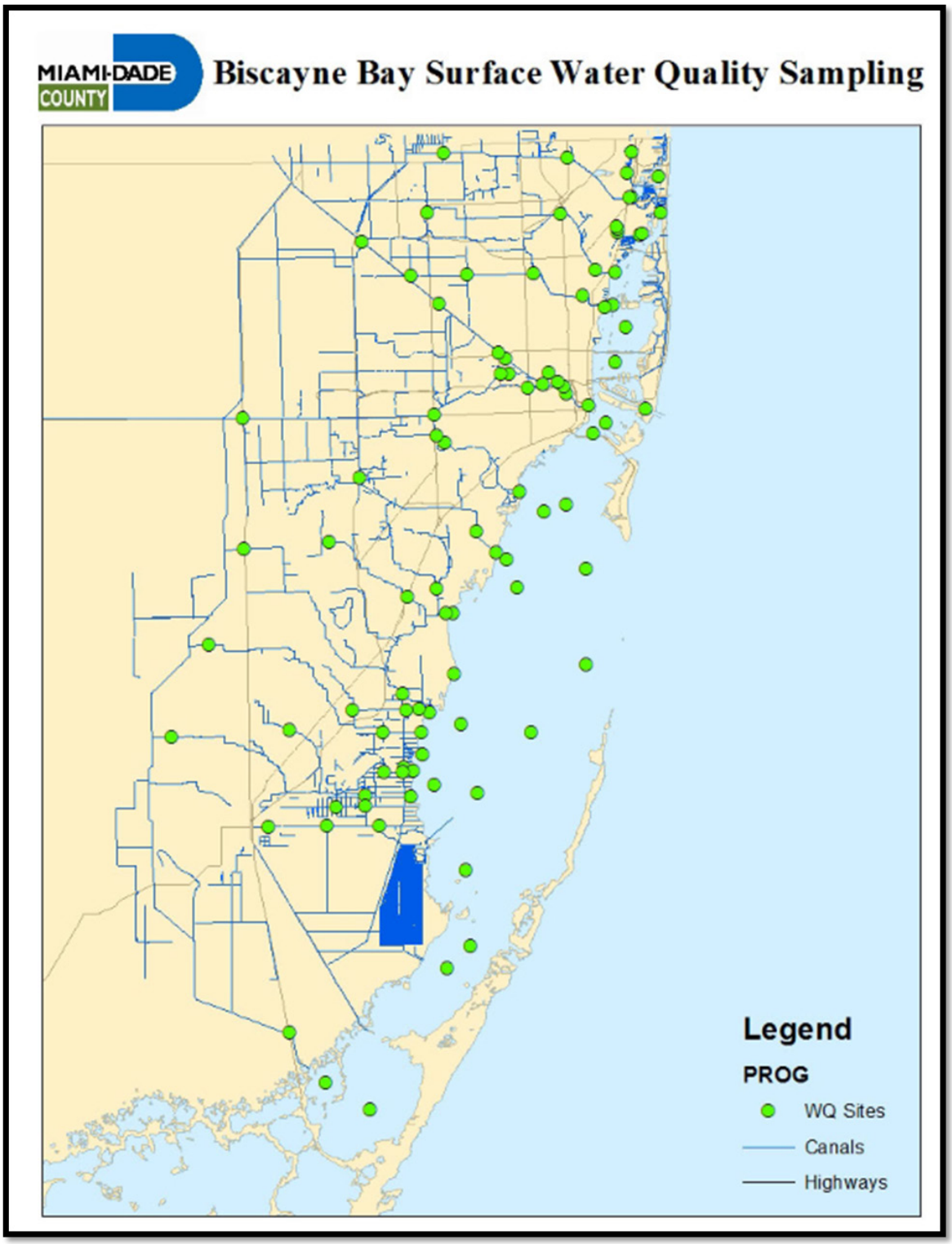


TABLE 5-1: WATER QUALITY LEVEL OF SERVICE PRIORITY INDICATOR POLLUTANTS

Pollutant	Target Criteria	Units
5-day Biochemical Oxygen Demand (BOD5)	9	milligrams/liter (mg/l)
Chemical Oxygen Demand (COD)	65	mg/l
Total Suspended Solids (TSS)	40	mg/l
Total Dissolved Solids (TDS)	1000	mg/l
Nitrate-Nitrite (Nox-N)	0.68	mg/l

Pollutant	Target Criteria	Units
Ammonia Nitrogen (NH3-N) & Total Kjeldahl Nitrogen (TKN)	0.5	mg/l
Total Phosphorus (TP)	0.33	mg/l
Orthophosphate, also known as Soluble or Dissolved Phosphorus (DP)	~~Not Available~~ 0.10	mg/l
Total Cadmium (Cd)	0.0023	mg/l
Total Copper (Cu)	0.0258	mg/l
Total Lead (Pb)	0.0102	mg/l
Total Zinc (Zn)	0.231	mg/l

Data collected at the sampling locations is analyzed by DERM and compared to load concentration standards for each pollutant maintained by the federal and county agencies to ensure that the C-6 Canal has not exceeded safe levels. The most recent data collected by DERM includes hydrologic and hydraulic modeling and pollutant loading estimates for existing and future conditions of the C-6 Drainage Basin. Management uses this information as part of its stormwater master plan for the C-6 Drainage Basin to rank and prioritize stormwater problem areas that directly relate to the water quality level of service and flood protection level of service for the C-6 Drainage Basin. DERM finalized ~~is currently finalizing~~ a Stormwater Master Plan for the C-6 Drainage Basin in 2009.

The ranking and prioritization of stormwater problem areas ~~that will be~~ were identified in the DERM report ~~will~~ have helped the municipalities within the C-6 Drainage Basin, including the City of Doral, target stormwater capital improvement projects. The intent of these projects is to maintain minimum water quality and flood protection level of service standards for the drainage basin. With proper stormwater management, the City of Doral will help protect its natural resources by ensuring water quality standards are met and lowering the risk for potential flooding into preservation and conservation areas.

The prioritization of problem areas within the C-6 Drainage Basin is based on the overall scores and rankings for water quality and flooding problem areas. The top water quality problem areas documented in the DERM report have relatively high WQLOS measurements, whereas flooding during the 100-year storm and lesser events is significant. Therefore, the top flooding problem areas will be the primary focus for Miami-Dade County to target improvements. ~~The City of Doral may consider preparing its own stormwater master plan to identify additional priority stormwater problem areas and adopt mitigation methods~~

~~to correct observed deficiencies.~~ The City of Doral adopted a Stormwater Management Master Plan in 2009. This plan outlined the city's watershed characteristics, basin performance, and capital improvement priorities. See the attached Stormwater Management Master Plan in the Appendix section.

The C-6 Canal Drainage Basin is part of the South Florida Water Management District's monitoring network. Recent data show ongoing challenges with nutrient loading of phosphorus and nitrogen. This has led to periodic exceedances of bacterial monitoring in urbanized areas. The main source of pollutants in the C-6 Drainage Basin is stormwater runoff.

AIR QUALITY

Due to prevailing climate and meteorological conditions, Miami-Dade County traditionally experiences better air quality than most other metropolitan areas in the nation. This is primarily due to the prevailing atmospheric conditions, trade winds, and convective wind activity common to Ssouth Florida that mix and diffuse air pollutants. Such favorable atmospheric conditions have a direct relationship with the good air quality enjoyed in the City of Doral. Nonetheless, adverse meteorological conditions, including limited vertical mixing and slow air-mass movement, do contribute to occasional buildup of emissions at ground level, which have resulted in infrequent exceedances of the National Ambient Air Quality Standards (NAAQS) for Miami-Dade County.

~~Between 1980 and 1988, there were 36 exceedances of NAAQS for ozone particulate matter recorded in Miami-Dade County, including 28 exceedances for ozone and eight exceedances for particulate matter. In addition, carbon monoxide violations ranged from a high of 71 recorded in 1981 on Flagler Street in Downtown Miami to one recorded in 1986. The majority of air pollution in the City of Doral emanates from the burning of coal, oil, and gasoline that result in emissions of carbon monoxide, nitrogen dioxide, and sulfur dioxide in the atmosphere. If combustion is not complete, hydrocarbons result ultimately contributing to failed atmospheric protection from the sun's ultraviolet rays. There were no recorded exceedances of NAAQS near the City of Doral reported in the 2003 Miami-Dade County Evaluation and Appraisal Report (EAR).~~

~~Miami-Dade, Broward, and Palm Beach Counties were designated by the US EPA as a moderate non-attainment area for ozone with a deadline of 1996 to conform to federal standards. This requirement lead to Miami-Dade County participating in Stratospheric Ozone Protection, which is a stationary source reduction and vapor recovery program aimed at controlling ozone precursors. As a result, Miami-Dade County has had only one ozone exceedance since 1988 and it was reported in northwest Miami-Dade County (1990). In addition, state and local agencies in south Florida initiated several new pollution control programs to meet the EPA's deadline. With validated air monitoring data available for the local airshed, the tri-county agencies demonstrated conformance with NAAQS and were in a position to qualify and apply for redesignation to ozone attainment/maintenance status. The tri-county area redesignation request was submitted to the US EPA through the Florida Department of Environmental Protection (FDEP) in November 1993. The EPA subsequently approved the redesignation request on April 27, 1995.~~

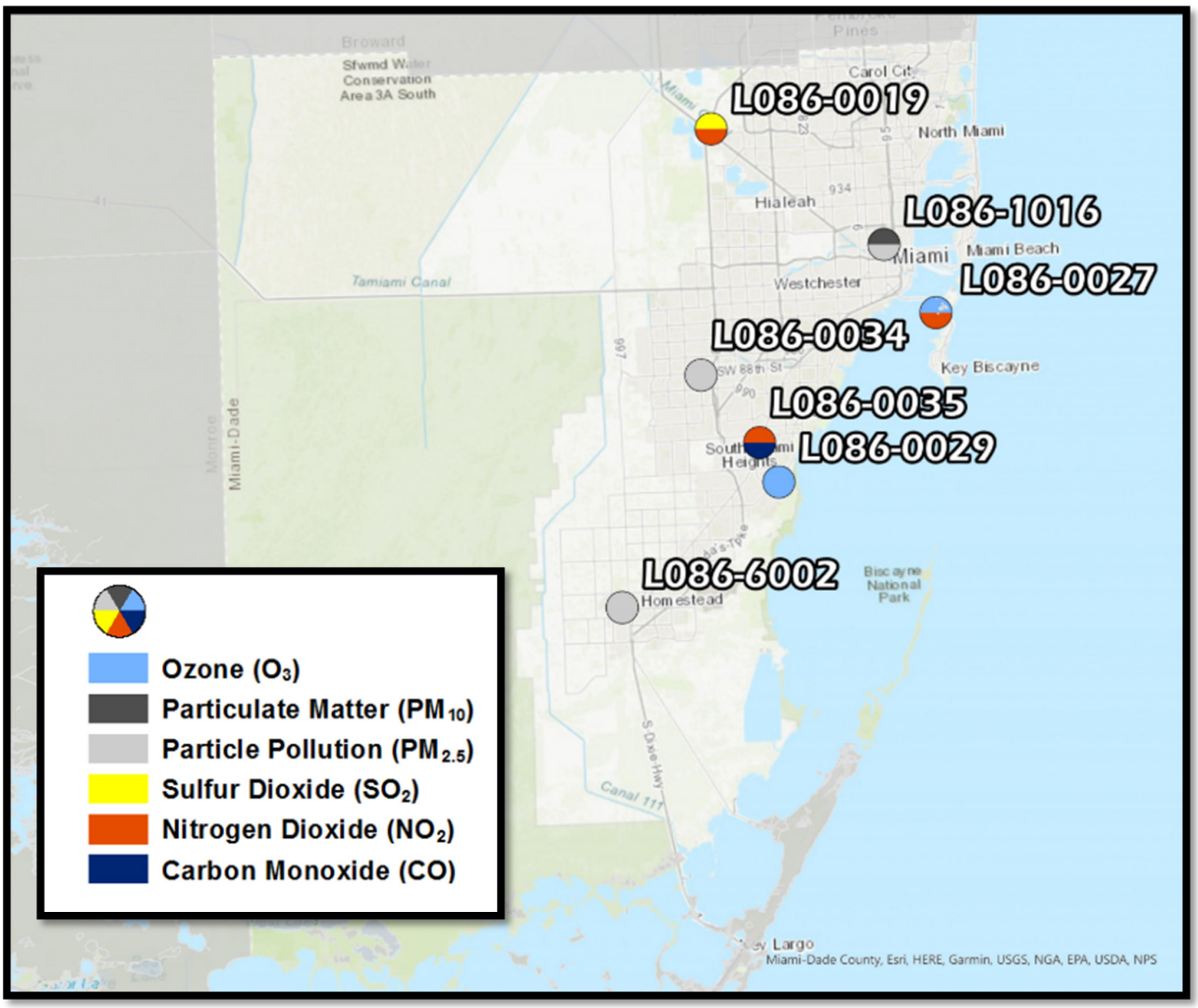
The Clean Air Act requires the Environmental Protection Agency (EPA) to set NAAQS for six common air pollutants. Harmful to human health and the environment, these commonly found air pollutants consist of particle pollution (often referred to as particulate matter), ground-level ozone, carbon monoxide, sulfur dioxides, nitrogen dioxides, and lead. Of the six pollutants, particle pollution and ground-level ozone pollution are the most common health threats. 2023 EPA air quality data showed that the county attained attainment status for all monitored pollutants.

The Air Quality Index (AQI) ratings show that Miami-Dade County maintained good to moderate AQI levels for 85% to 90% of days between the years 2015 and 2023. Ozone exceedances have been extremely rare, with only one recorded in recent history occurring in 2020. This was due to unusual weather conditions that trapped pollutants for a short period. Overall, ozone formation potential remains due to heavy mobile sources such as automobiles and air travel. In addition, increased maritime activity in the area

increases this risk. PM2.5 continues to cause regional issues that affect the weather and residents' health. The heavy buildup of PM2.5 is due to dust events over the ocean, not solely to anthropogenic sources.

The Miami-Dade County DERM currently maintains 12 air quality monitoring locations. Map 5.2 ~~V-2~~ illustrates the location of these stations. The City of Doral has no air monitoring stations within its boundaries. The closest station is the West Airport site, located on the southeast corner of Milan Dairy Road and NW 41st Street, nearly within the city's limits. This site monitors ozone and carbon monoxide gases. Dosage levels can routinely fluctuate due to presence of the nearby Miami International Airport and surrounding industrial complexes. There is no station specifically monitoring Doral's industrial corridor and increasing development, so the City of Doral is encouraged to coordinate with Miami-Dade County to perform air pollutant tests of the identified area if signs of air pollution are evident.

MAP 5.2: MIAMI-DADE COUNTY AIR QUALITY MONITORING STATIONS



FLOODPLAINS

The majority of land within the City of Doral is located within an area subject to flooding from a 100-year and 500-year storm. A minute area within the western portion of Doral is Zoned (X), which identifies that area outside of the 100-year floodplain. Observations are based on flood maps maintained for the National Flood Insurance Program (NFIP) administered by the Federal Emergency Management Agency (FEMA). Specifically, the city lies within the following FEMA flood zones:

~~Special Flood Hazard Areas Inundated by 100-year Flood~~

- ~~**Zone AE –** Base flood elevations determined~~

~~Other Flood Areas~~

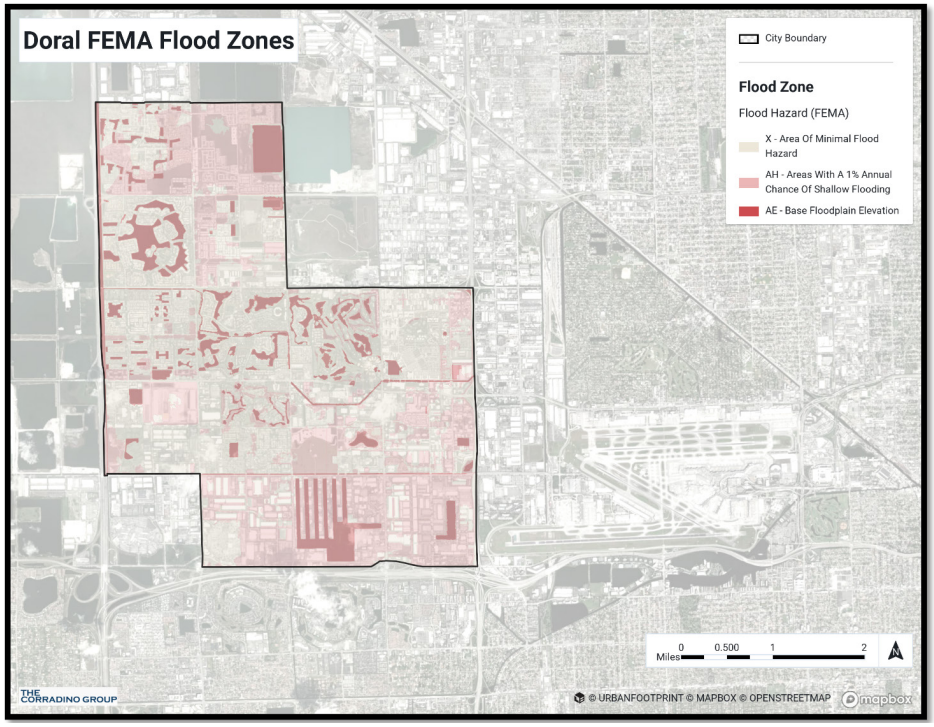
- ~~**Zone X –** Areas of 500-year flood; areas of 100-year flood with average depths of less than one foot or with drainage areas less than one square mile; and areas protected by levees from 100-year flood~~

~~Other Areas~~

- ~~**Zone X –** Areas determined to be outside 500-year floodplain~~

As shown in **Map 5.3**, the city of Doral does not include every FEMA-designated flood zone. The three FEMA flood zones present within the City are Zones X, AH, and AE. Zone X represents areas of no to minimal flood risk and is located outside the mapped 0.2% annual chance floodplain. This is commonly referred to as the 500-year floodplain. Zone AH is a high-risk Special Flood Hazard Area (SFHA) with a 1% annual chance in the 100-year floodplain model of flooding and is characterized by shallow ponding, typically with flood depths between 1 and 3 feet, for which Base Flood Elevations (BFEs) are established. Zone AE is also a high-risk SFHA within the 1% annual chance floodplain, where detailed hydraulic analyses have been conducted, and Base Flood Elevations are established to guide development and floodplain management standards. About 85% of the city is categorized in this flood zone.

MAP 5.3: FEMA FLOOD ZONES (2024) IN DORAL, FL



City of Doral encompasses approximately 9,874 acres in total area and approximately 9,380 acres (95%) of this land area is identified as being located within one of the three flood zone categories identified above. As such, Doral should monitor construction activity within floodplain areas and, where necessary, regulate new construction to reduce future flood risk. In addition, the City of Doral should take measures to regulate development within an identified floodplain by passing a floodplain ordinance and joining the NFIP.

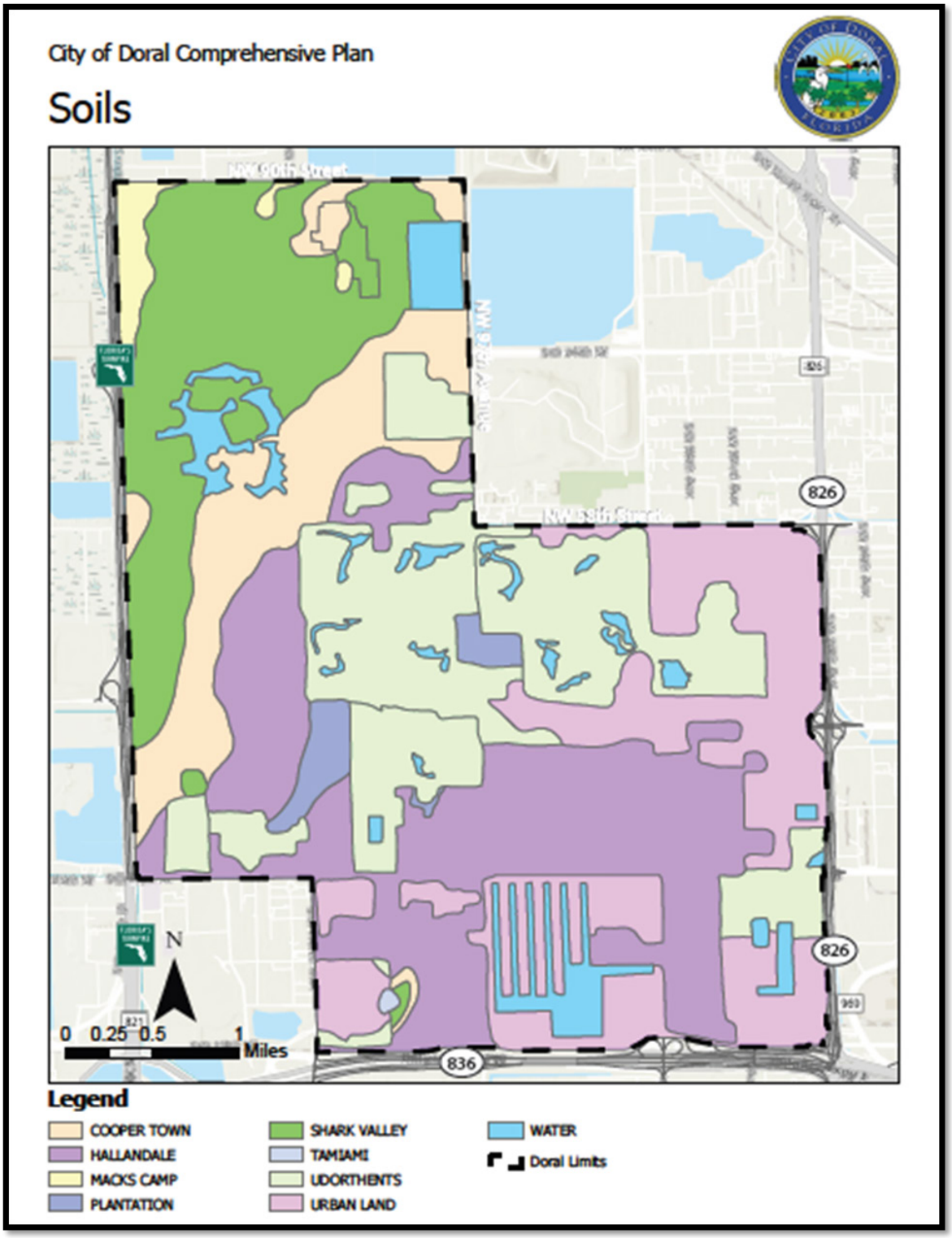
SOIL EROSION

Due to the area's relatively flat topography, dry land within Miami-Dade County, including the City of Doral, is not threatened with significant soil erosion potential. The highest potential for soil erosion within Doral occurs near construction areas and adjacent to canal banks. Soil erosion along canal banks can be limited by the use of littoral zones and plantings. Soil erosion in construction areas from wind and heavy rain can be limited by reducing the time between clearing a site and beginning construction and using silt fences as a form of stormwater pollution prevention for downstream receiving waters.

There is also some potential for soil erosion within the City of Doral during boat traffic and increased water circulation, which triggers erosion of these dredged banks and informal channels. Marine patrol enforcement of speed limits is the principal mitigation for this type of erosion.

As shown in **Map 5.4**, the majority of the natural soil composition in Doral is Hallandale, followed by Udorthents. Urban land comprises a large swath of the city, but is largely in the central and southern areas, with no reports in the northern parts of Doral.

MAP 5.4: SOILS TYPOLOGY IN DORAL, FL

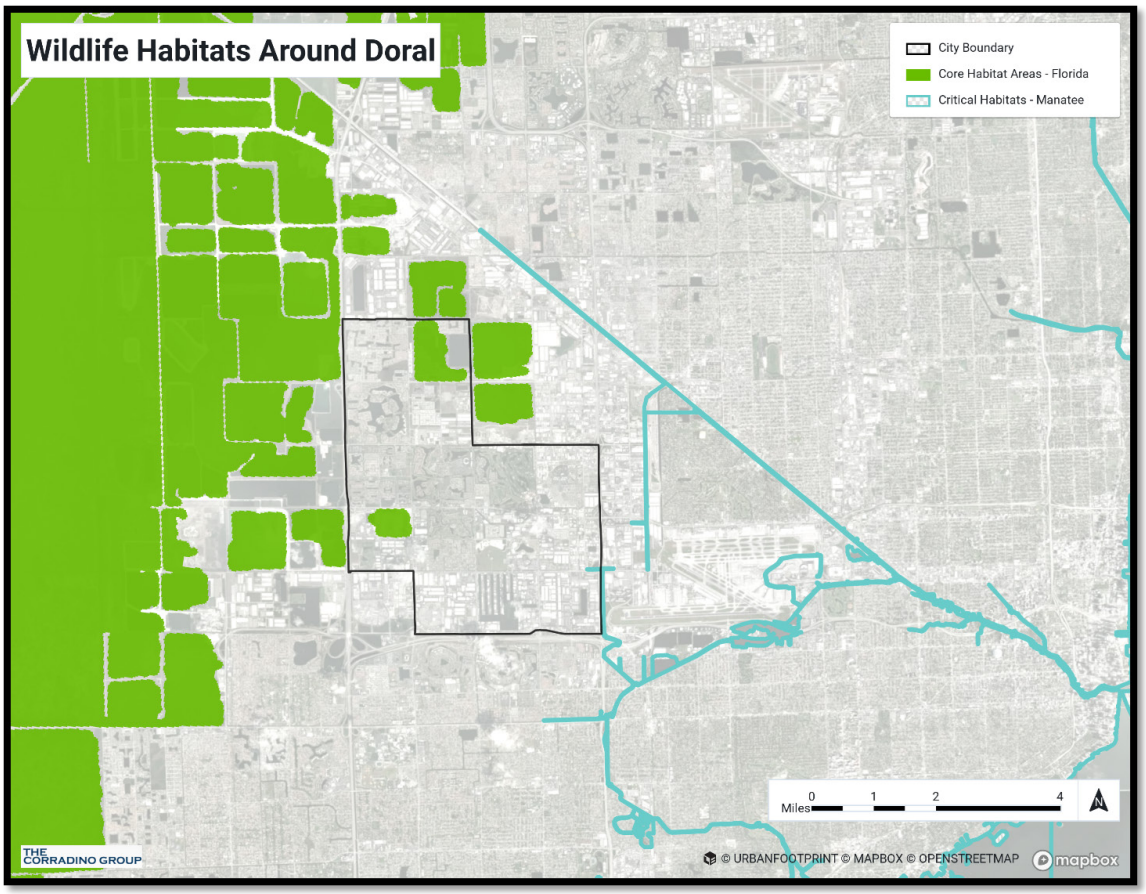


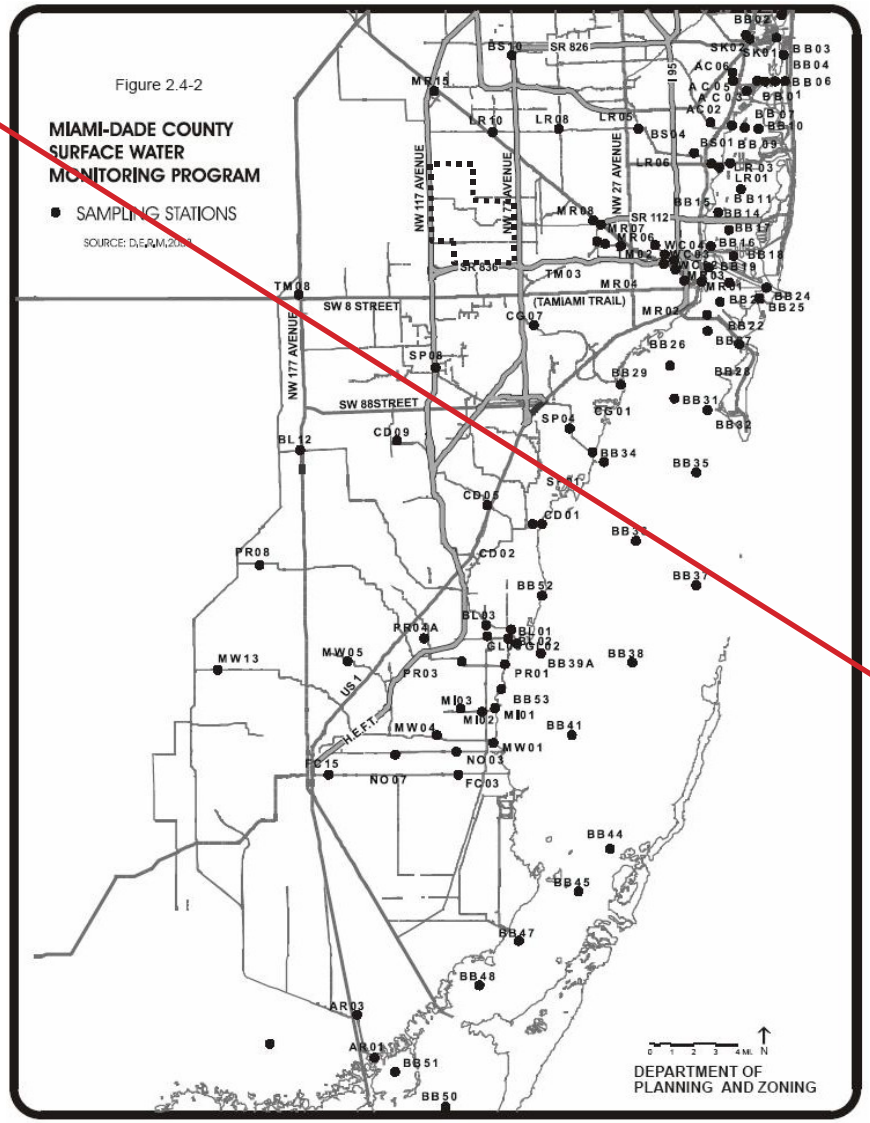
ECOLOGICAL COMMUNITIES

No known plant (Flora) or animal (Fauna) studies have been completed for the City of Doral specifically. Table 5.2 ~~6-2~~ identifies all of the endangered, threatened, and species of special concern for plants and animals native to Miami-Dade County which may be present in the City of Doral.

As shown in **Map 5.5**, there are only two areas that are considered to be core habitat zones within the city. These are located in the central west and the northeast of the city. The northeast area is part of a remediation project, and future plans continue to conserve this land for wildlife. The Florida Manatee travels up to the city's border, but only along its southeast border. Given this, efforts to promote the cleanliness of surface water are encouraged to support this threatened species.

MAP 5.5: WILDLIFE HABITAT AREAS AND MANATEE CRITICAL AREAS





CITY OF DORAL

Miami-Dade County Surface Water Sampling Stations

Map V-1

Legend

Doral City Limit

Not to Scale

Source: Miami-Dade County Evaluation and Appraisal Report (adopted October 28, 2005)

Kimley-Horn and Associates, Inc.

ILER PLANNING GROUP

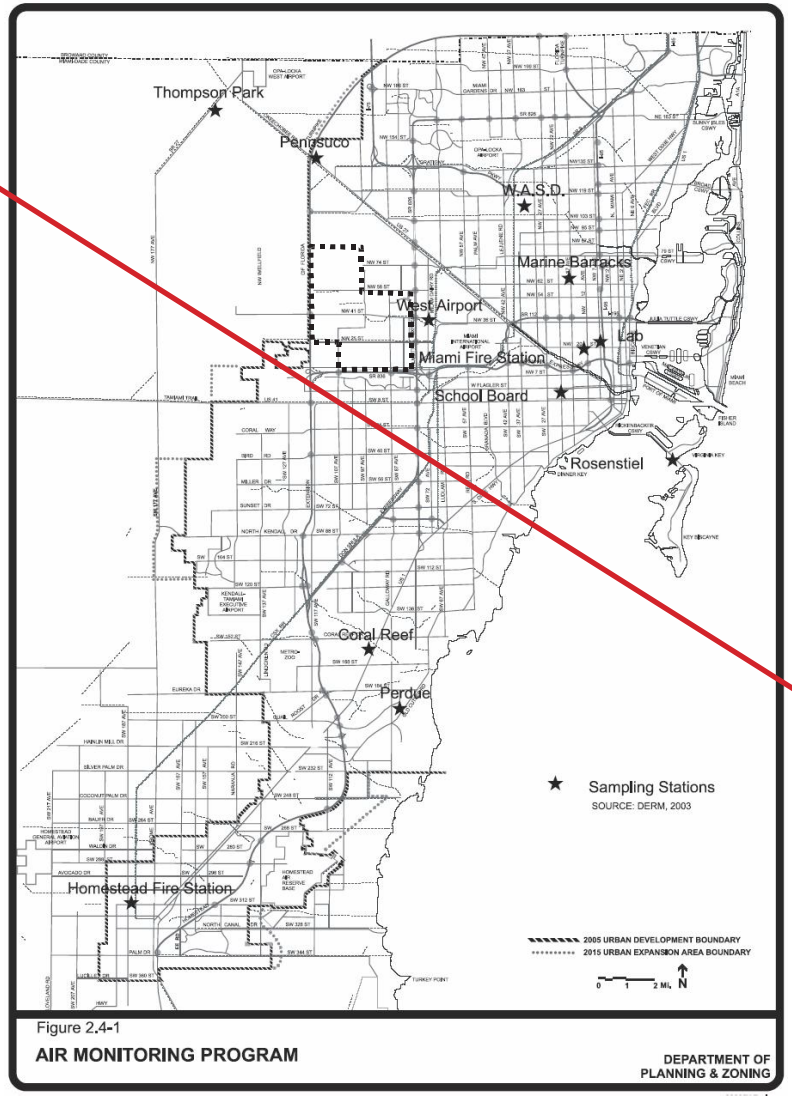


Figure 2.4-1

AIR MONITORING PROGRAM

DEPARTMENT OF PLANNING & ZONING

CITY OF DORAL

Miami-Dade County Air Monitoring Stations

Map V-2

Legend

Doral City Limit

Not to Scale

Source: Miami-Dade County Evaluation and Appraisal Report (adopted October 28, 2003).

Kimley-Horn and Associates, Inc.

TABLE 5-2: FLORA AND FAUNA FOUND IN MIAMI-DADE COUNTY WHICH ARE CONSIDERED ENDANGERED, THREATENED, OR SPECIES OF SPECIAL CONCERN

Scientific Name	Common Name	State Status (GFC)	Federal Status (FWS)
	Fish		
Ammocrypta	Crystal darter	~~TNL~~	~~C2~~ NL
Centropomus	Common snook	~~SSC~~ NL	~~SSC~~ NL
Cyprinodon variegates hubbsi	Lake Eustis pupfish	NL	NL
Etheostoma histrio	Harlequin darter	~~SSC~~ ~~SSC~~NL	~~SSC~~ ~~SSC~~NL
Etheostoma olmstedi maculaticeps	Southern tessellated darter; tessellated johnny darter	NL	NL
Micropterus n. sp. Cf coosae	Shoal bass; Chipola bass	NL	NL
Rivulus marmoratus	Mangrove rivulus; rivulus	NL	NL
	Amphibians and Reptiles		
Alligator mississippiensis	American alligator	~~SSC~~ NL	T (S/A
Caretta caretta	Atlantic loggerhead turtle	T	T
Chelonmia mydas mydas	Atlantic green turtle	E	E
Crocodylus acutus	American crocodile	~~E~~ T	E
Dermochelys coriacea	Leatherback (=leathery) turtle	E	E
Drymarchon corais couperi	Eastern indigo snake	T	T
Elaphe guttata guttata	Red rat snake; corn snake	~~SSC~~NL	T
Eretmochelys imbricate imbricate	Atlantic hawksbill turtle	E	E
Gopherus polyphemus	Gopher turtle	SSC T	~~C2~~ NL
Kinosternon bauri	Striped mud turtle	~~E~~NL	NL
Lepidochelys kempi	Atlantic ridley turtle	E	E
Ophisaurus compressus	Island glass lizard	NL	~~C2~~ NL
Pituopjis melanoleucus mugitus	Florida pine snake	~~SSC~~ T	~~C2~~ NL
Pseudobranchus striatus lustricolus	Gulf hammock dwarf siren	NL	~~C2~~ NL
Rana capito (= reolate) aesopus	Florida gopher (=crewfish) frog	~~SSC~~NL	~~C2~~ NL
Sceloporus woodi	Florida scrub lizard	NL	~~C2~~ NL
Storeria dekayi victa	Florida brown snake	T	NL
Tantilla oolitica	Miami black- headed; rimrock crowned snake	T	~~C2~~ NL
	Birds		
Ajala ajaja	Roseate spoonbill	~~SSC~~ T	NL
Ammodramus maritimus juncicola	Cape Sable seaside sparrow	E	E
Ammodramus maritima peninsulae	Scotts' seaside sparrow	E	E
Ammodramus savannarum floridanus	Florida grasshopper sparrow	E	E

Scientific Name	Common Name	State Status (GFC)	Federal Status (FWS)
Aphelocoma coerulescenes coerulesc	Florida scrub jay	T	T
Aramus guarauna	Limpkin	SSC	
Campephilus principalis	Ivory-billed woodpecker	E	E
Charadrius melodus	Piping plover	NL	NL
Cistothorus palustris griseus	Worthington's marsh wren	E	E
Circus cyaneus	Marsh hawk; northern harrier	NL	NL
Columba leucocephala	White-crowned pigeon	~~T~~ E	E
Dendroica kirtlandii	Kirtland's warbler	E	E
Egretta caerulea	Little blue heron	~~SSC~~ T	NL
Egretta rufescens	Reddish egret	~~SSC~~ T	NL
Egretta thula	Snowy egret	~~SSC~~ T	NL
Egretta tricolor	Tricolored (=Louisiana) heron	~~SSC~~ E	~~NL~~ E
Eudocimus albus	White ibis	~~SSC~~T	NL
Falco columbarius	Pigeon hawk or merlin	NL	NL
Falco sparverius paulus	Southeastern American kestrel	T	NL
Haliaeetus leucocephalus	Bald eagle	T	T NL
Lanius ludoviciamus	Loggerhead shrike	C2 NL	NL
Mycteria americana	Wood stork	E T	E T
Pandion haliaetus	Osprey	SSCT	NL
Pelecanus occidentalis	Brown pelican	SSCT	NL
Scientific Name	Common Name	State Status (GFC)	Federal Status (FWS)
Rallus longirostris insularum	Mangrove clapper tail	NL	~~C2~~ NL
Rostrhamus sociabilis	Snail kite	E	E
Rynchops niger	Black skimmer	~~SSC~~T	NL
Speotyto cunicularia	Burrowing owl	~~SSC~~T	NL
Sterna antillarum	Least tern	T	NL
Vermivora bachmanii	Bachman's warbler	E	E
Mammals			
Felis concolor coryi	Florida panther Magaptera	E	E
novaengliae	Humpback whale	E	E
Mustela vison evergladensis	Everglades mink	T	
Neofiber alleni	Round tailed muskrat	NL	~~C2~~ NL
Odocoileus virginianus clavium	Key deer; toy deer Peromyscus	E	E
polionotus niveiventrus	Southeastern beach mouse	T	T
Physeter catodon	Sperm whale; cachalot	E	E
Plecotus rafinesquil	Southeastern big eared bat	NL	~~C2~~ NL
Podomys floridanus	Florida mouse	SSC	~~C2~~ NL

Scientific Name	Common Name	State Status (GFC)	Federal Status (FWS)
Sciurus niger avicennia	Big Cypress fox squirrel	SSC	~~C2~~ NL
Trichechus manatus	West Indian/Floridamanatee	~~E~~ T	~~E~~ T
Ursus americanus flordanus	Florida black bear	T	NL
Anaea troglodyte floridalis	Florida leafwing butterfly	C2 E	~~NL~~ E
Aphodisu troglodytes	Aphodius tortoise commensal scarab beetle	NL	~~C2~~ NL
Atrytone arogos arogos	Eastern beard grass skipper	NL	~~C2~~ NL
Ceracoclea floridana	Florida ceraclean longhorn caddisfly	NL	~~C2~~ NL
Cyclocephala miamiensis	Miami roundhead sacrab beetle	NL	~~C2~~ NL
Eumaeus atala florida	Florida atala butterfly	NL	~~C2~~ NL
Micronaspsis floridana	Florida intertidal firefly	NL	~~C2~~ NL
Mixogaster delongi	Delong's mixogaster flowerfly	NL	~~C2~~ NL
Mycotrupes pedester	Scrub Isle burrowing scarab beetle	NL	~~C2~~ NL
Onthopheagus polyphemi	Tortoise Commensal scarab	NL	~~C2~~ NL
Oxyethira florida	Florida oxyethiran micro-caddisfly	NL	~~C2~~ NL
Photuris brunnipennis floridana	Everglades brownwing firefly	NL	~~C2~~ NL
Strymon acis bartrami	Bartram's hairstreak butterfly	NL	~~C2~~ NL
Crustaceans			
Crangonyx gradimanus	Florida cave amphipod	C2NL	NL
Crangonyx hobbsi	Hobb's cave amphipod	C2NL	NL
Molluscs			
Liguus fasciatus	Florida tree snail	SSC	NL
Plants			
Acrostichum aureum	Golden leather fern	E	NL
Adiantum melanoleucum	Fragrant maidenhair fern	E	NL
Adiatum tenerum	Maidenhair fern (unnamed)	T	NL
Adiantum tetraphyllum	Not listed	T	NL
Amorpha crenulata	Crenulata lead plant	E	E
Argythamnia blodgettii	Blodgett's wild-mercury	E	~~C2~~NL
Asplenium dentatum	Slender spleenwort	E	NL
Asplenium serratum	Bird's nest spleenwort, wild birdnest fern	E	NL
Bourreria cassinifolia	Little strongback	E	NL
Brassia caudata	Long-tailed spider orchid	T	NL
Brickellia eupatoriodes	Florida brickeel- bush Florida boneset	E	~~C2~~NL
Byrsonima lucida DC	Not listed	E	NL

Scientific Name	Common Name	State Status (GFC)	Federal Status (FWS)
Calyptranthes zuzygium	Not listed	E	NL
Campylonerum angustifolium	Narrow strap fern	E	NL
Canella winterana	Not listed	E	NL
Cassia keyensis	Big Pine Partridge pea; Florida Keys senna	T	NL
Catopsis berteroniana	Powdery catopsis	E	NL
Centrogenium setaceum	Spurred neottia	E	NL
Cereus gracilis	Aboriginal prickly apple	E	~~C2~~NL
Cereus gracilis var. simpsonii	Simpson's prickly apple	E	~~C2~~NL
Cereus pentagonus	Dildoe cactus	T	NL
Chamaesyce deltoidea	Wedge spurge	E	E
Chamaesyce garberi	Garber's spurge	E	T
Chamaesyce porteriana	Porter's hairy- podded spurge	E	~~C2~~NL
Chamaesyce porteriana var. scoparia	Porter's broon spurge	E	~~C2~~NL
Cheilanthes microphylla	Southern lip fern	E	NL
Chrysophyllum oliviforme	Satinleaf	E	NL
Coccothrinax argentata	Silver palm	CE	NL
Culubrina cubensis	Not listed	E	NL
Conradina grandiflora	Large-flowered rosemary	E	~~C2~~NL
Cordia sebestena	Geiger tree	E	NL
Crossopetalum ilicifolium	Quailberry	E	NL
Crossopetalum rhacoma	Rhacoma	E	NL
Cucurbita okeechobeensis	Okeechobee gourd; Indian pumpkin	E	E
Cyrtopodium punctatum	Cowhorn orchid	E	NL
Digitaria pauciflora	Two spiked finger	NL	~~C2~~
Elytraria carolinensis var. angustiflora	Narrow leaved Carolina scalystem	NL	~~C2~~NL
Encyclia boothiana var. erythroniodes	Dollar (dogtooth) orchid	E	NL
Eriochloa michauxii var. simpsonii	Longleaf (=Simpson's) cup grass	T	~~C2~~NL
Ernodia littoralis	Beach creeper	T	NL
Eugenia confusa	Redberry ironwood	T	NL
Eugenia rhombea	Red stopper	E	NL
Forestiera segregate var. pinetorum	Pinewood (narrow- leaf Florida) privet	NL	~~C2~~NL
Galactia pinetorum	Narrow-leaf milkpea	NL	~~C2~~NL
Galactia smallii	Small's milkpea	E	E
Gossypium hirsutum	Wild cotton	E	NL
Guaiacum sanctum	Lignum-vitae tree	E	NL
Guzmania monostachia	Fuch's bromeliad	E	NL

Scientific Name	Common Name	State Status (GFC)	Federal Status (FWS)
Halophila johnonii	Johnson's seagrass	T	NL
Helianthus debilis ssp. Vestitus	Hairy cucumber-leaf sunflower; hairy beach sunflower	NL	~~C2~~NL
Hippomane mancinella	Manchineel	T	NL
Ionopsis utriculariodes	Delicate ionopsis; violet orchid	E	NL
Ipomoea microdactyla	Wild potato morning glory	E	NL
Ipomoea tenuissima	Rocklands morning glory	E	NL
Jacquemontia curtissii	Pineland clustervine	E	E
Jacquemontia reclinata	Beach clustervine	E	E
Jacquinia keyensis	Joewood	T	NL
Lantana depressa	Pineland Lantana	NL	~~C2~~NL
Lechea divaricata	Pine pinweed	E	~~C2~~NL
Licaria triandra	Licaria	E	NL
Linum arenicola	Sand flax	E	~~C2~~NL
Linum carteri var. carteri	Miami (=Carter's small-flowered) flax	E	~~C2~~NL
Linum carteri var. smallii	South Florida (=Carter's large-flowered) flax	E	~~C2~~NL
Lomariopsis kunseana	Holly fern	T	NL
Lythrum flagellear	Lowland loosestrife	NL	~~C2~~NL
Mallotonia gnaphalodes	Sea lavender	E	NL
Melanthera parvifolia	Small-leaved (S. FL.) cat tongue	NL	~~C2~~NL
Microgramma heterophylla	Polypody fern (unnamed)	T	NL
Myrcianthes fragrans var. simpsonii	Simpson's stopper; twinberry	NL	~~C2~~NL
Okenia hypogaea	Burrowing four o'clock	E	NL
Ophioglossum plamatum	Hand adder's tongue fern	T	NL
Peperomia humilis	Peperomia (unnamed)	E	NL
Peperomia magnoliifolia	Magnolia-leaved peperomia	E	NL
Phoradendron rubrum	Mahogany mistletoe	E	NL
Peperomia obtusifolia	Florida peperomia	E	NL
Polygala smallii	Tiny (=Small's) milkwort	E	E
Polyrrhiza lindenii	Ghost orchid; palm polly	E	NL
Pseudophoenix sargentii	Buccaneer (=Sargent's cherry) palm	E	NL
Pteris longifolia	Ladder brake fern	T	NL
Pteroglossapis	Wild coco; false coco (Eulphia) ecristata	T	~~C2~~NL
Remirea maritime	Beach star	E	NL
Rhipsalis baccifera	Mistleoe cactus	E	NL

Scientific Name	Common Name	State Status (GFC)	Federal Status (FWS)
Scientific Name	Common Name	State Status (GFC)	Federal Status (FWS)
Rhynochosia cinerea	Not listed	E	NL
Roystonea elata	Flordia royal palm	E	NL
Sabal miamiensis	Not listed	E	NL
Sachsia bahamensis	Bahama sachsia	E	NL
Schizaea gemanii	Ray (=tropical curly-grass) fern	E	NL
Spiranthes polyantha	Florida Keys (=Fort George; =green) ladies' tresses	E	~~C2~~NL
Stillingia sylvatica ssp. Tenuis	Slender queen's delight	NL	~~C2~~NL
Surian maritime	Bay cedar	E	NL
Swietenia mahogany	West Indian mahogany	T	NL
Tectaria coriandrifolia	Hairy (Hattie Bauer) Halberd fern	NL	C2NL
Tectaria xamesiana	Not listed	T	NL
Tephrosia angustissima	Narrow-leaved (=coastal) hoary pea	E	~~C2~~NL
Tetrazygia bicolor	Tetrazygia	T	NL
Trichomanes krausii	Filmy fern (unnamed)	T	NL
Trichomanes punctatum	Filmy fern (unnamed)	T	NL
Tripsacum floridanum	Gama grass	NL	~~C2~~NL
Tropidia polystachya	Young-palm orchid	E	NL
Vanilla barbellata	Worm-vine orchid; link vine	E	NL
Vanilla mexicana	Vanilla (unnamed)	E	NL
Verbena (=Glandularia) maritime	Coastal vervain	E	~~C2~~NL
Verbena (=Glandularia) tampensis	Tampa vervain	E	~~C2~~NL
Warea carteri	Carter's mustard	E	E
Zamia floridana	Florida coontie	CE	NL
Zamia umbrosa	East coast coontie	CE	NL
Zanthoxylum coriaceus	Wild prickly ash	E	NL

~~Table Key~~
~~GFC = Florida Game and Fresh Water Fish Commission~~
~~FDA =Florida Department of Agriculture and Consumer Services FWS = United States Fish and Wildlife Services~~
~~CITES = Convention on International Trade in Endangered Species of Wild Fauna and Flora~~
~~C = Commercially Exploited E = Endangered Species~~
~~SSC = Species of Special Concern T = Threatened Species~~
~~T(S/A) = Threatened/Similarity of Appearance C1 = Candidate Species, Category 1~~
~~C2 = Candidate Species, Category 2 NL = Not Listed~~

GROUND WATER

The Biscayne Aquifer is a deep water aquifer located under the majority of Miami-Dade, Broward, and southern Palm Beach Counties that serves as the main source of potable water for all of these areas. The South Florida Water Management District (SFWMD) establishes conservation policies for the regional water supply and the City of Doral ~~should~~ coordinates with the SFWMD to ensure conservation of this vital natural resource. The biggest threat to the water supply is generally the potential for saltwater intrusion; thus the primary concern of the SFWMD is to reasonably limit groundwater extraction from the water supply and to balance the needs between development and conservation.

The City of Doral ~~should~~ continues to work with Miami-Dade County DERM to encourage aquifer recharge and storage capacity for the Biscayne Aquifer through stormwater management permitting. Under this initiative, stormwater runoff generated from a five-year storm for any new development within the city would be retained on- site through the use of swales, exfiltration systems, and drainage wells. By keeping water on-site, these systems allow water to infiltrate into the aquifer and thereby recharge groundwater. They also provide water quality treatment as runoff must percolate through the soil before entering the groundwater system.

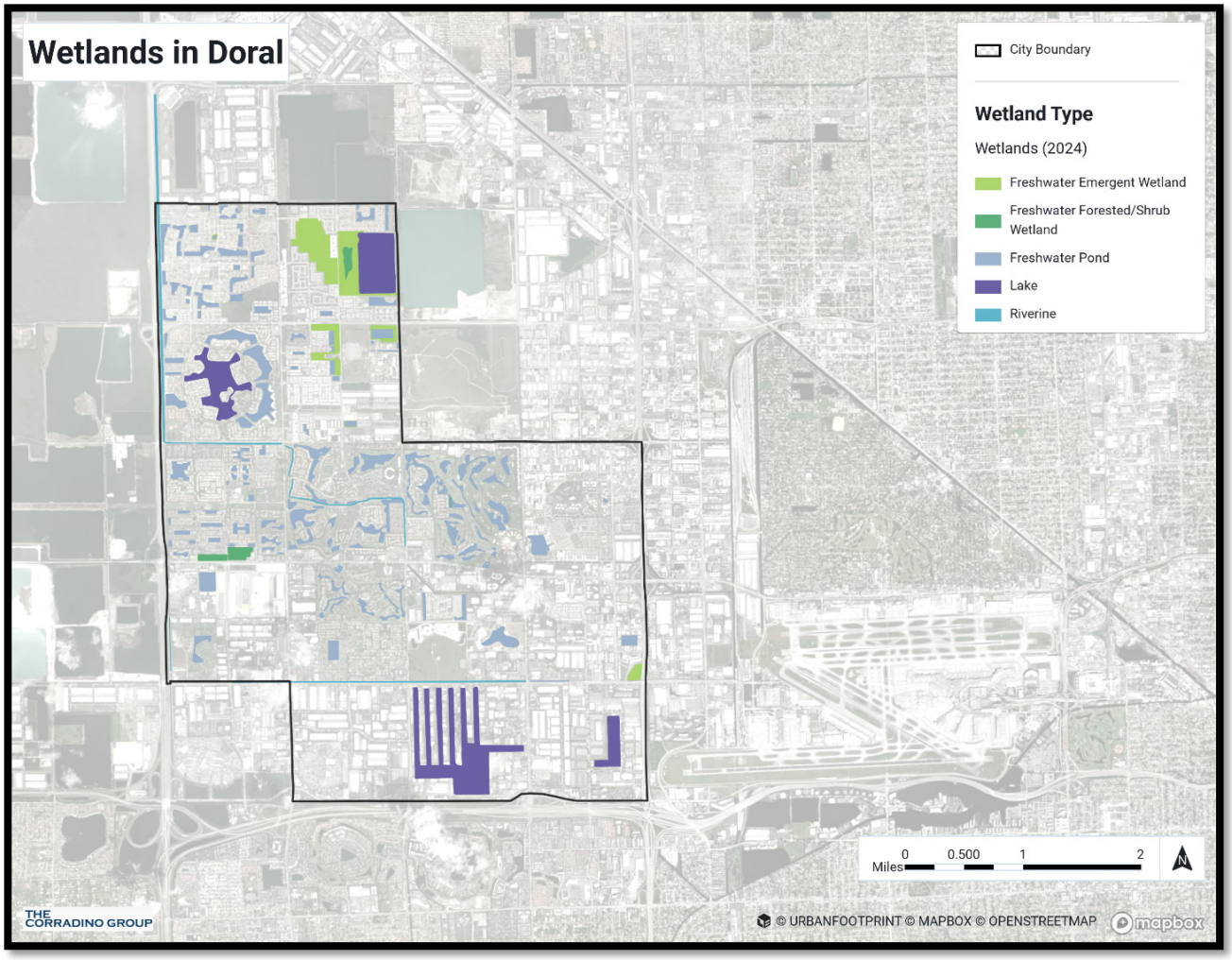
All development within wellfield protection areas requires DERM approval. Prohibited uses include gas stations, dry cleaners, auto repair facilities, and industries handling hazardous materials. This had led to enhanced requirements for water quality and aquifer recharge. As of 2023, there are 15 ambient groundwater monitoring stations in the wellfield area.

WETLANDS

Wetlands are generally classified as areas where the water table is near or above the surface except during extended dry periods. Wetlands are typically adjacent to natural water bodies and man-made lakes, and in low-lying depressions, and have poorly drained, level, organic, or marl soils. Wetlands provide needed habitat for aquatic and land species, including migrating birds. Wetlands also provide storage areas for stormwater and a “natural filtration system” to cleanse the water. Currently, there are several permitted wetland areas in the City of Doral. The wetland areas were designated as privately owned and were not in public acquisition programs in 1995, but these areas possess wetland qualities and functions. Since the last update of this plan, the city now has approximately 120 acres of jurisdictional wetlands. ~~The wetlands could warrant public acquisition as part of ecosystem or water supply protection, restoration and management programs. See.Map V-3 for illustration of DERM permitted privately owned wetlands.~~ These wetlands are primarily freshwater marshes, forested wetlands from cypress dome remnants, and herbaceous wetlands. The management is measured by the acreage of wetlands that were acquired and managed through SFWMD Save Our Rivers Program (SORP), the Miami-Dade County Environmentally Endangered Lands (EEL) Program or other public land acquisition and management programs to preserve their wetland values.

The majority of the city’s wetlands remain in private ownership but have conservation easements and mitigation requirements in place to protect them. All wetlands require DERM review and approval prior to any permitting. The existing wetland as of 2024 is shown in **Map 5.6.**

MAP 5.6: WETLANDS IN DORAL, FL



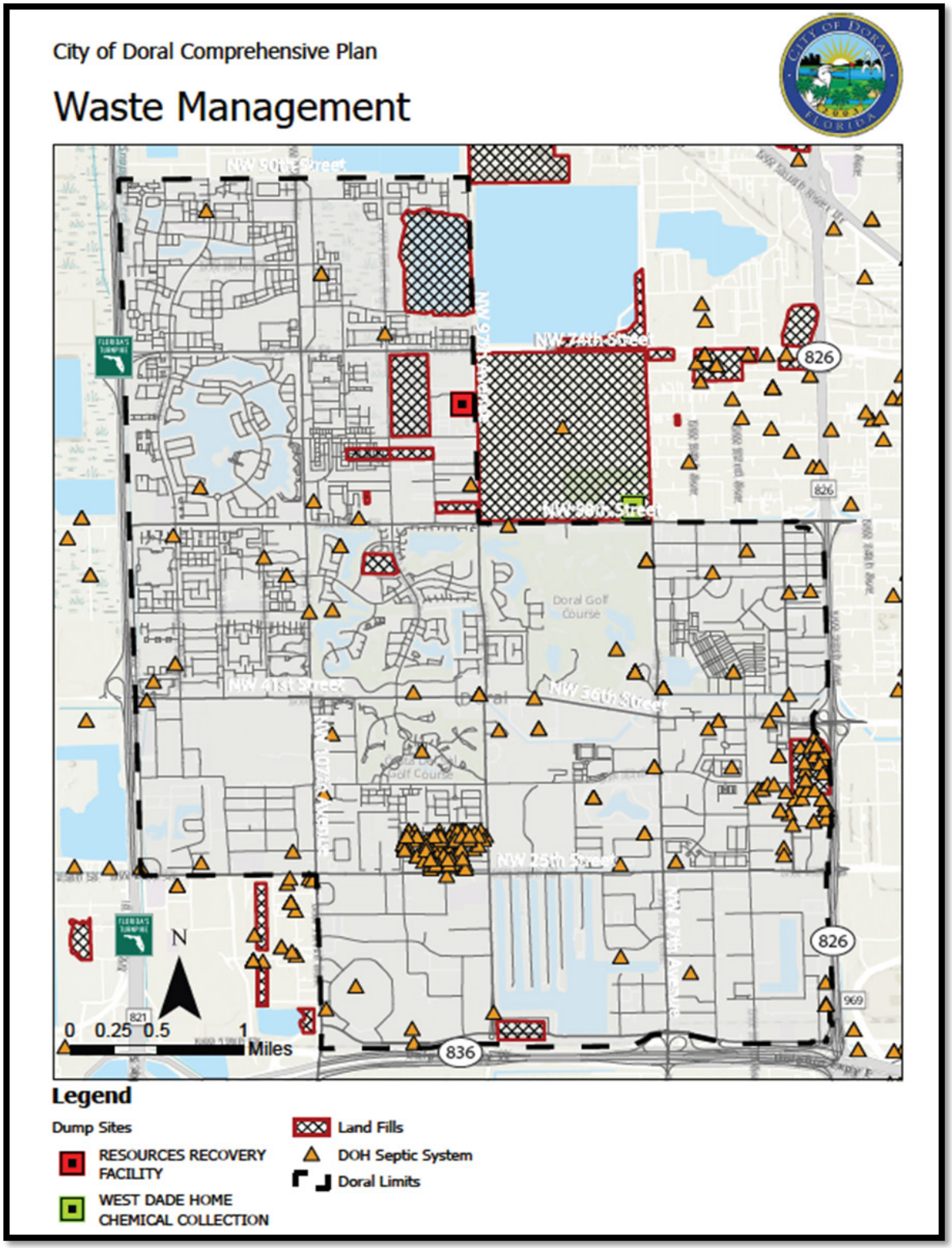
UPLANDS

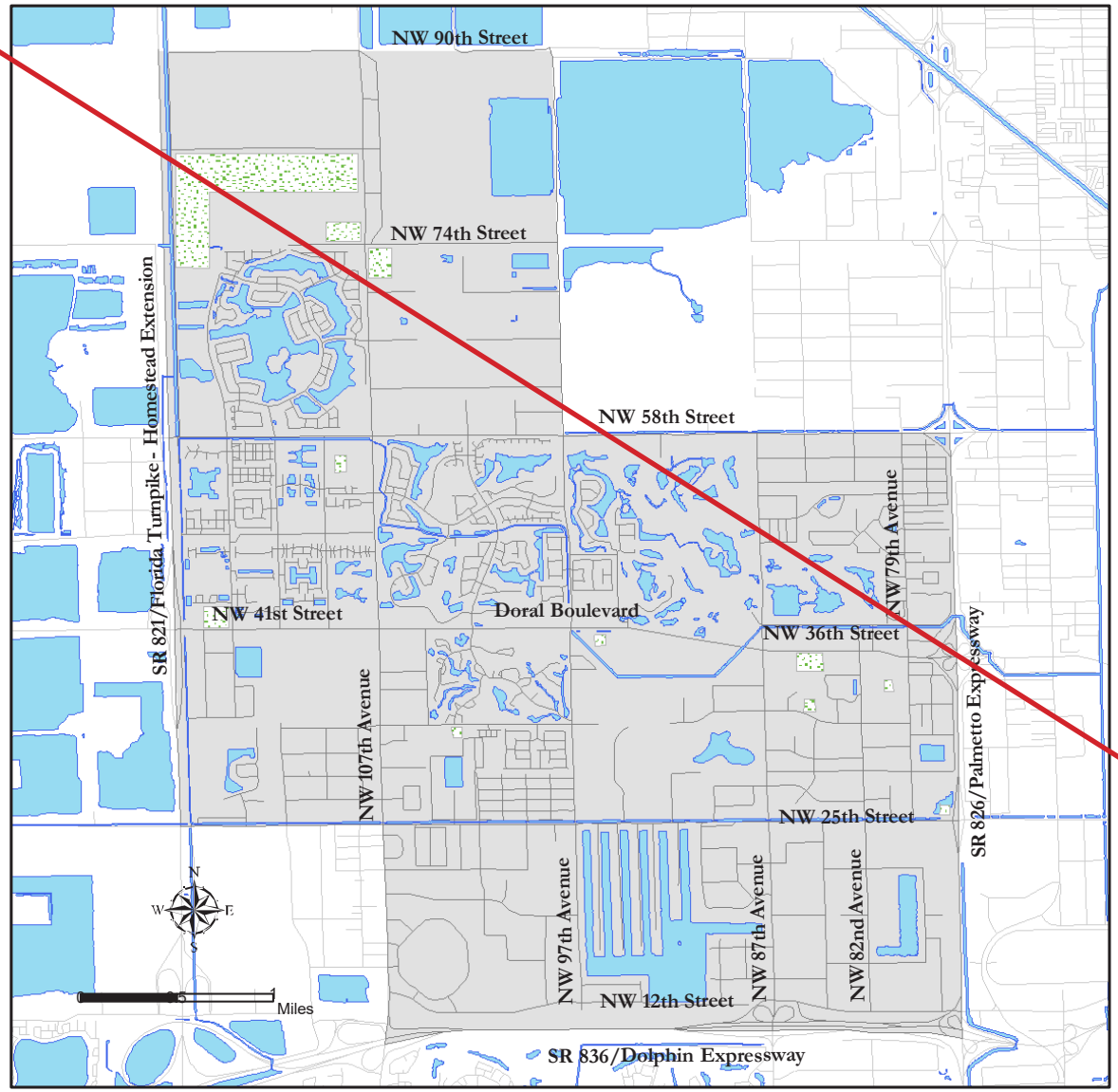
Uplands are primarily made up of pine flatwoods and oak hammocks that provide habitat for many species of animals to nest and forge (particularly mammals). In Miami-Dade County, including the City of Doral, upland protection and restoration will be measured by the acreage of hammocks and pinelands, retained in public ownership or acquired by public land acquisition programs. Additional measures will include the number of sites where management plans have been, or are being implemented, the number of Endangered Lands Covenants and the number of sites and acreage retained in Natural Forest Communities. Doral should coordinates with DERM to determine if any lands within the city are potentially deemed endangered; and whether those areas are considered for future acquisition for preservation purposes.

HAZARDOUS WASTE MANAGEMENT

The Miami-Dade County DERM regulates the hazardous waste monitoring program for all of Miami-Dade County. Currently, there are ~~eight~~ approximately 12 to 15 formally designated sites for Hazardous Waste Remediation in or adjacent to Doral. These sites potentially consist of abandoned gas stations, small chemical packaging plants, and other sites acquiescent to remediation. See ~~Map V-4~~ **Map 5.7** for description and illustration.

MAP 5.7: WASTE MANAGEMENT IN DORAL, FL





CITY OF DORAL

DERM Permitted Privately Owned Wetlands

Map V-3

Legend

- Wetland Sites
- Doral City Limit
- Water Bodies

Source: Miami-Dade County Department of Environmental Resource Management (DERM).

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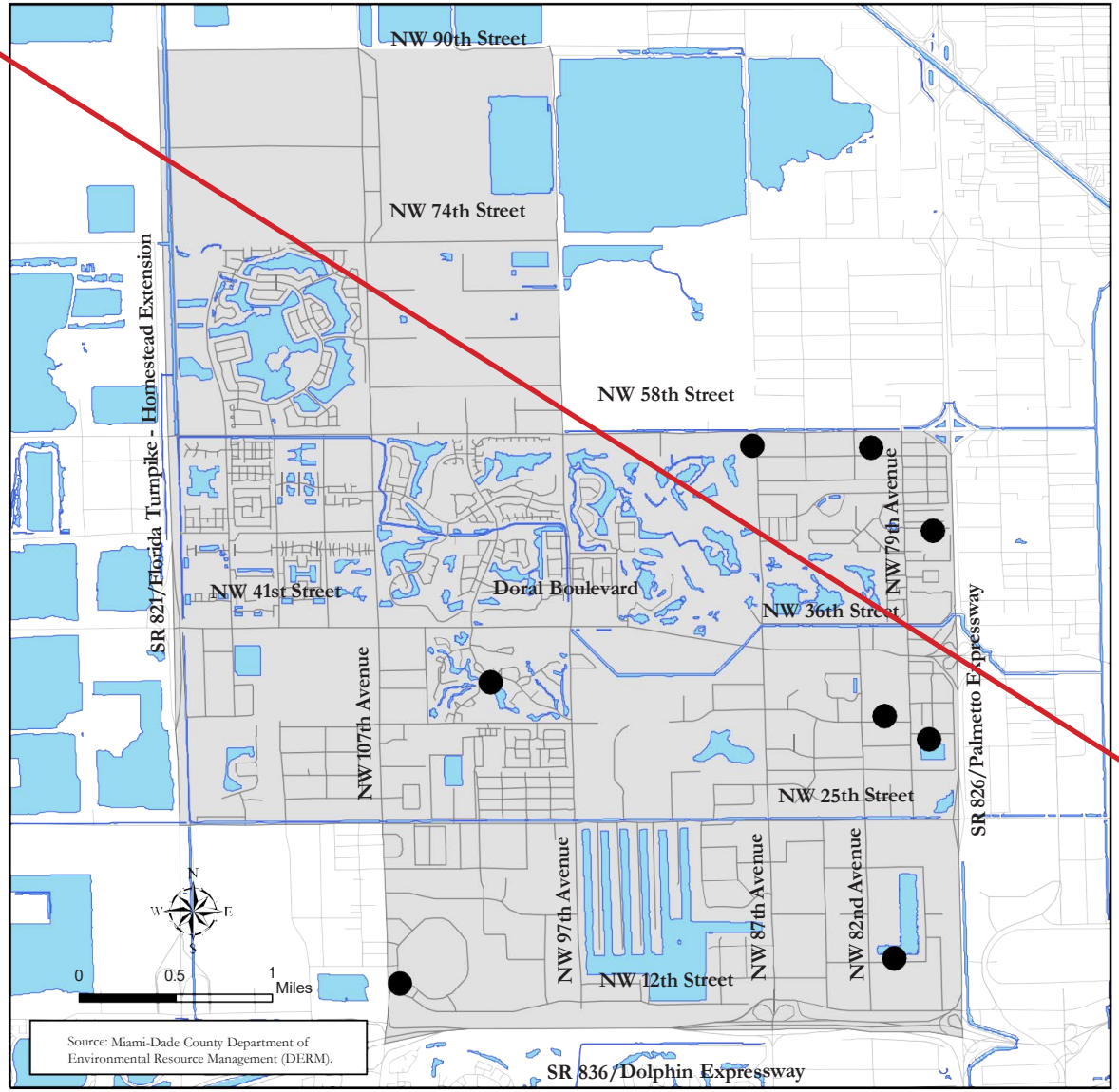

CITY OF DORAL

DERM Hazardous Waste Remediation Sites

Map V-4

Legend

- Remediation Sites
- Doral City Limit
- Water Bodies

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EXISTING AND POTENTIAL CONSERVATION AND USE OF NATURAL RESOURCES

~~Rule 9-J5.013(1)(b)~~ The Florida Administrative Code requires that a local government inventory and analyze all natural resources found within its jurisdiction in terms of commercial use, recreational use, conservation use, and pollution problems. These items are addressed in the following paragraphs.

Existing and Potential Use of Natural Resources

None of the natural resources identified within the City of Doral are currently being used explicitly for commercial purposes, nor is it anticipated that they will in the future. Most of the surface water bodies, wetlands, and uplands identified in the area are protected for conservation use as part of the local canal drainage system. Other community parks and preserves located within the City of Doral serve as transition between the built and natural environments allowing residents to connect with nature while protecting certain areas for local plant and animal habitat. The FDEP considers air quality good and soil erosion is not a primary concern.

Furthermore, actions to ensure the continuation of recreation and conservation areas in Miami-Dade County, including the City of Doral are summarized below:

Protection of Air Quality

The primary goal is improved air quality in the county to meet all standards set by the US EPA as of 1994 and meet all future EPA air quality standards and their respective deadlines to reduce human exposure to air pollution. The following are recommendations that will mitigate the consequences of air pollution within the incorporated municipalities of Miami-Dade County:

- Monitor existing and future emissions of fumes and vapors from hazardous waste facilities, and compliance of Lowest Achievable Emission Rates.
- Require vapor control systems to reduce hydrocarbon emissions from vehicles being filled at gas stations.
- Treat buildings with unacceptable levels of friable asbestos pursuant to state and federal regulations to prevent further exposure and threat to human health.
- ~~Implement the Miami-Dade County CO2 Plan recommendations to reduce carbon dioxide levels by the year 2005.~~
- Expand Miami-Dade County air monitoring networks in order to better evaluate air quality throughout the county.
- Prevent future development of residential and other high occupancy land uses from being located in areas that may be adversely impacted by stationary sources of air pollutants.

Miami-Dade County generally has good air quality throughout the year as a result of mitigation completed in the early 1990's. The City of Doral is encouraged to work with Miami-Dade County DERM, US EPA, FDEP, and the Miami International Airport to institute policies and projects aimed at maintaining current air quality levels in conformance with NAAQS.

Protection of Ground Water

The City of Doral must protect groundwater resources from degradation, provide for effective surveillance for pollution and clean up polluted areas to meet all applicable federal, state, and county ground and surface water quality standards.

This objective will be met in the primary C-6 Drainage Basin within the City of Doral, or individual sub-basins within the primary basin, when the ambient five-year average value for each of the 12 NPDES priority pollutants in that basin or sub-basin does not exceed the target criteria. This objective can be achieved through continual monitoring of the NPDES groundwater and surface water pollutants.

Although the deep aquifer beneath the City of Doral is not used as a source of potable water, shallower aquifers do exist as groundwater extraction sources for irrigation and should be monitored and protected.

Regulations within wellfield protection areas shall be strictly enforced. The recommendations of the Northwest Wellfield Protection Plan shall continue to be fully implemented as are recommendations that evolve from the West Wellfield planning process.

The western portion of the City of Doral lies within the Northwest Wellfield Protection Zone, with an ambient groundwater sampling station just east of NW 177th Avenue and north of Tamiami Trail. See Map 5.8 V-5 for a general location of the wellfield zone sampling locations. The following policies shall be recommended for action regarding the existing Northwest Wellfield Protection Plan:

- No new facilities that use, handle, generate, transport, or dispose of hazardous wastes shall be permitted within the Northwest Wellfield Protection Area, and all existing facilities that use, handle, generate, transport or dispose of more than the maximum allowable quantity of hazardous wastes within the Northwest Wellfield Protection Area shall be required to take substantial measures such as secondary containment and improved operating procedures to ensure environmentally safe operations.

- The water management systems that recharge the Northwest Wellfield Area shall be protected and enhanced.

- The ambient groundwater monitoring program shall be expanded to include all wellfield protection areas to serve as an "early warning system" for monitoring high-risk land uses and point sources.

- The City of Doral should coordinate with Miami-Dade County DERM to identify facilities that handle, use or generate hazardous wastes in wellfield protection areas and address the feasibility of removing the grandfathering provision for facilities that have been determined to be significant sources of pollution within wellfield protection areas.

- County-owned and operated facilities that use hazardous materials or generate hazardous wastes shall be moved to locations that are outside and down gradient of wellfield protection areas whenever such facilities need to be expanded by more than 50 percent.

- Provide interconnected sanitary/storm sewer systems, seek to abandon existing septic tanks and discourage future use.

- Provide stormwater management systems within wellfield protection areas.

Protection of Surface Waters

The City of Doral contains a portion of the C-6 drainage canal and small lakes. Surface water drainage is the primary contributor to pollution in these canals. The City of Doral and Miami-Dade County DERM should continue to monitor water quality levels in the C-6 Drainage Basin and target improvements, where necessary, to maintain minimum level of service standards.

The following policies are recommended to correct existing system deficiencies and problems that contribute to groundwater and surface water quality degradation, and to guide future development:

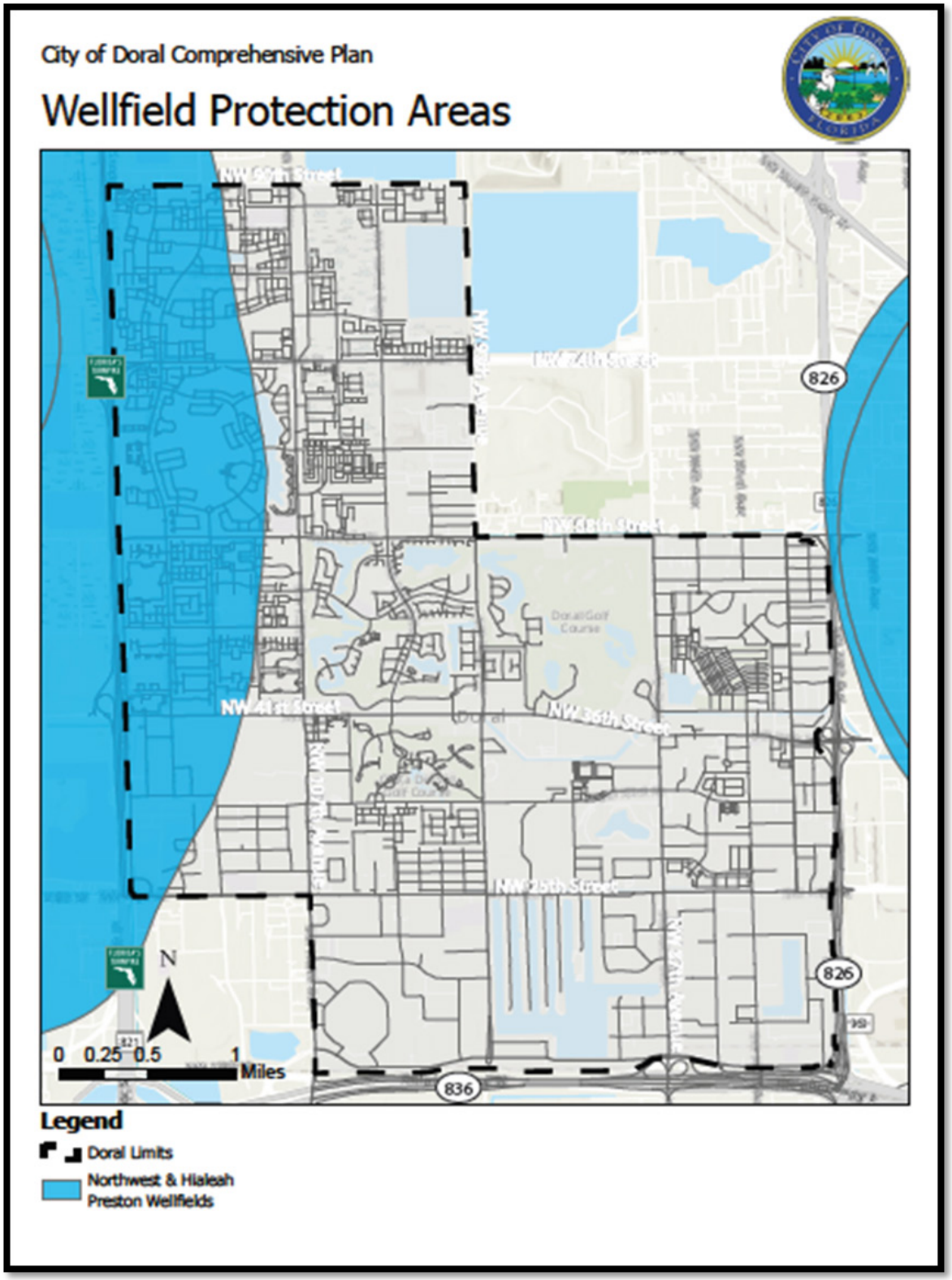
- Provide stormwater management systems in industrial and heavy commercial areas, and in areas with large concentrations of small hazardous waste generators.

- Mitigate basins and sub-basins that fail to meet the target criteria for the 12 NPDES priority pollutants listed under "Surface Water Quality."

- Identify and monitor industries and businesses which generate and/or handle more than 50 gallons of hazardous and industrial wastes per year. Coordination among agencies that require reporting of hazardous wastes is pertinent.

- Utilize the "Best Management Practices" established by Miami-Dade County for potential sources of water pollution such as packing houses that discharge

MAP 5.8: WELLFIELD PROTECTION AREAS IN DORAL, FL



wastewater to the ground, and shall also be established for golf courses, pesticide mix-loading facilities, and handlers of hazardous materials to reduce environmental risk.

Protection of Vegetative Communities and Wildlife Habitats

The overwhelming majority of vegetative and wildlife habitat in the City of Doral lies within man-made wetlands, forests, and canals. Within the built environment, large lots and low density development patterns serve as secondary habitats for small animals and some plant life. Additional areas to serve as small vegetative communities for local wildlife could be maintained on private property within the City of Doral through initiation of a preservation landscape ordinance and/or requiring more landscaping on lots when natural habitat is not available. The City of Doral should identify future land areas to secure for conservation land use.

Protection of Mineral Resources

Some areas in the City of Doral are formally designated for conservation and/or protection of natural resources to guard against encroachment from development and pollution. Most of Miami-Dade County is underlain by limestone. The "lake belt" region in northwestern portion of the county, north of Tamiami Trail, west of the Turnpike extension, including the Northwest Wellfield Area, is expected to continue to be the area of greatest mineral extraction activity in the county through the year 2050 ~~2015~~.

Protection of Floodplain Areas

~~Development in the floodplain should be regulated through the enforcement of a floodplain management ordinance. In addition, the City of Doral should join FEMA's NFIP.~~

The City of Doral participates in the National Flood Insurance Program (NFIP) administered by the Federal Emergency Management Agency (FEMA). This participation enables property owners within the city to purchase federally-backed flood insurance.

Floodplain Management Ordinance: In accordance with NFIP requirements, the City of Doral has adopted and enforces a floodplain management ordinance that:

- Regulates development in Special Flood Hazard Areas (SFHA) to minimize flood damage.
- Requires new construction and substantial improvements in SFHA to be elevated to or above the Base Flood Elevation (BFE).
- Requires flood-resistant materials for construction in flood zones.
- Requires anchoring of manufactured homes to resist flotation.
- Prohibits encroachments in the regulatory floodway that would cause increases in flood levels.
- Requires floodplain development permits for all development in SFHA.

Community Rating System (CRS): The City of Doral is an active participant in the NFIP Community Rating System and currently holds a Class 7 rating (as of 2023). This rating provides residents with a 15% discount on flood insurance premiums for policies in SFHA. The CRS rating is based on the city's implementation of floodplain management activities that exceed minimum NFIP requirements, including:

- Flood hazard information dissemination;
- Flood protection and assistance measures;
- Stormwater management and floodplain regulations;
- Open space preservation and flood warning programs.

Flood Insurance Requirements:

- **Mandatory Purchase:** Properties located in Special Flood Hazard Areas (Zones A, AE, AH, AO, or VE) with

federally-backed mortgages are required to carry flood insurance.

- **Coverage Limits:** Standard NFIP policies provide up to $250,000 for building coverage and $100,000 for contents coverage for residential properties; higher limits available for commercial properties.
- **Preferred Risk Policy:** Properties outside SFHA may be eligible for lower-cost Preferred Risk Policies.
- **Elevation Certificates:** The City of Doral requires Elevation Certificates for all new construction and substantial improvements in Special Flood Hazard Areas to document compliance with floodplain management regulations and to determine appropriate insurance rates.

Protection of Soils

Areas in the City of Doral having soils with good potential for agricultural use without additional drainage of wetlands shall be protected from premature urban encroachment. Also, sites having soils which cannot properly support proposed structures shall have their soils excavated and replaced with suitable fill material to ensure the structural integrity for the life of the proposed development.

Soil Types:

The primary soil type present in Doral is Urban land complex, which is highly disturbed and has mixed fill of materials. Prior to development, area was dominated by:

- Perrine marl (calcium carbonate soil)
- Rockdale outcrop (limestone bedrock near surface)
- Krome very gravelly loam (well-drained, limestone substrate)

Most natural soils have been extensively modified by development activities.

Erosion Potential Assessment:

- **Overall Risk:** Generally low to moderate due to flat topography

High Risk Areas include:

- Canal banks (especially along C-6 Canal and tributaries)
- Construction sites (temporary erosion during active development)
- Areas adjacent to major roadways (from runoff)
- Wetland edges during dry periods

Erosion Control Measures:

- **Construction Sites:** Required silt fencing, erosion control blankets, and temporary stabilization
- **Canal Banks:** Littoral zones, native vegetation, and riprap protection.
- **Public Areas:** Green infrastructure practices, bioswales, and rain gardens.
- **Private Development:** Required stormwater management systems and landscaping standards.

Soil Limitations for Development:

Limestone Bedrock:

- **Shallow bedrock:** the shallow bedrock limits deep foundations and underground utilities.
- **Poor Drainage:** Some areas have high water tables and poor drainage.
- **Fill Material:** Extensive use of imported fill for raising elevations in flood-prone areas.
- **Soil Stability:** Generally stable, but some areas require

compaction and preparation.

Urban Soils:

- **Compacted:** High compaction in developed areas limits infiltration.
- **Contamination:** Potential contamination from historic land uses (agricultural, industrial).
- **Quality:** Variable soil quality for landscaping and tree planting.
- **Management:** Need for soil remediation and improvement for urban greening.

Protection of Natural Areas as Recreational Uses

Some of the natural resources within the City of Doral could be maintained as low impact park and recreation facilities; supportive of bicycle and pedestrian paths, canal walkways, natural reserves, or passive park opportunities. Currently, there are park and recreation areas in low density residential communities within the City of Doral.

~~CURRENT AND PROJECTED POTABLE WATER NEEDS~~

~~Rule 9-J5.013(1)(c) The Florida Administrative Code requires that a local government determine its current and projected water needs for the 10 and 20-year planning horizon and identify new water supply sources to serve future demand. The Water Supply Plan is included in the Infrastructure Element of this Plan. This section of the Conservation Element DIA Report provides an inventory of the current and projected water needs and potential sources to the year 2015. The projections will be based on present water consumption demands placed on the Miami-Dade County WASD and population projections derived from the Future Land Use Element.~~

~~Existing Potable Water Sources~~

~~The City of Doral receives water service from the Miami-Dade County WASD. The Biscayne Aquifer is the current source of potable water for all of Miami-Dade County. The City of Doral is primarily served by the Hialeah Preston Water Treatment Plant, however potable water may be provided to the City of Doral through a WASD interconnect system that links several county potable water plants together to serve concurrently during periods of heavy demand. Doral will also need to coordinate with WASD to determine whether or not to abandon private wells established for irrigation purposes and ultimately whether a plan for using reclaimed water provided by Miami- Dade County's Central District Regional Wastewater Treatment Plant for irrigation within the county, including Doral, is feasible and cost efficient.~~

~~Existing and Projected Potable Water Capacity and Demand~~

~~The majority of the potable water is distributed throughout the county by WASD, with wholesale service from the Medley Service Area; see Map V-5. In 2002, the potable water plant capacity for the entire system was 225.0 MGD with a peak water demand reported at 189.9 MGD. The county's level of service standard for potable water service is to maintain a maximum daily capacity for the system no less than two percent above the maximum peak demand for the previous year plus each of the five preceding years. Using these criteria, WASD is currently meeting their level of service standard for potable water.~~

~~Miami-Dade County WSAD maintains a generation rate of 200 gallons per person per day for determining maximum peak demand for potable water. Therefore, the 2000 population for the City of Doral generates an average daily demand of 4.09 MGD (20,438 x 200 gal/capita/day = 4.09 MGD). Table 6-4 provides potable water projections for the City of Doral over the 10-year planning horizon.~~

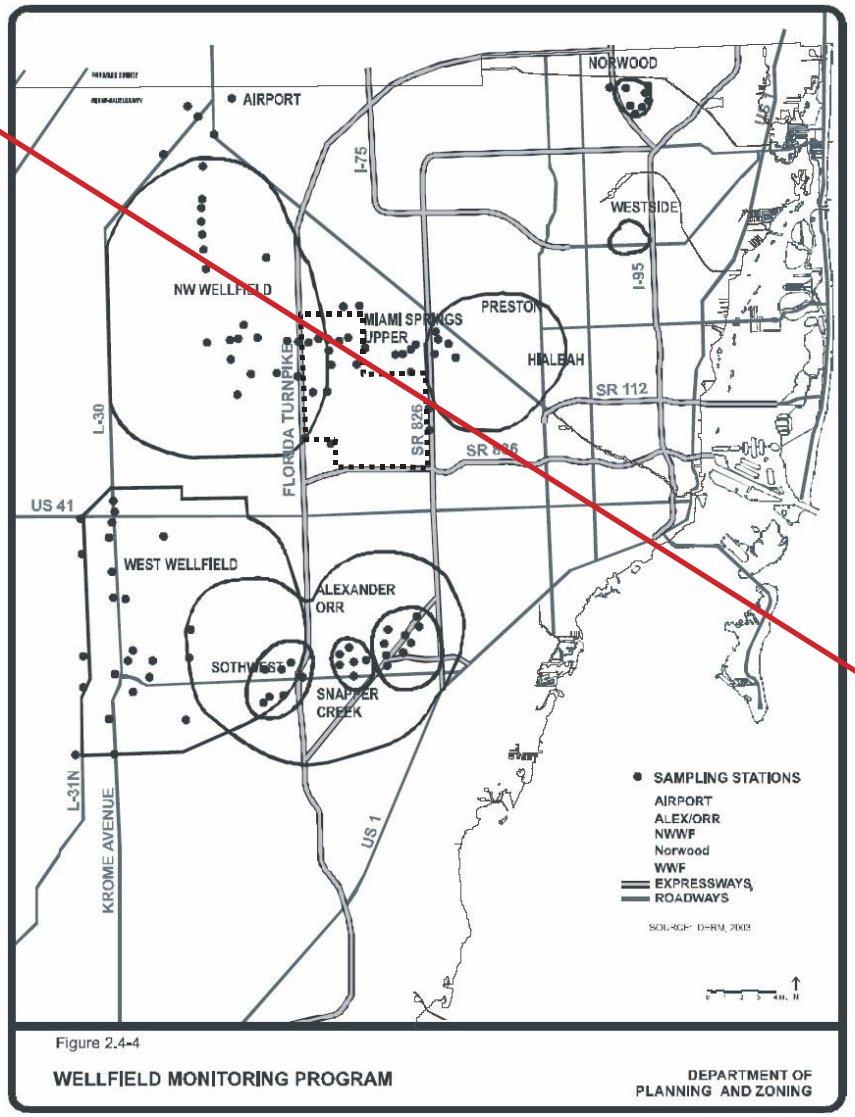


Figure 2.4-4

WELLFIELD MONITORING PROGRAM

DEPARTMENT OF PLANNING AND ZONING

CITY OF DORAL

Miami-Dade County
Wellfield Sampling Stations

Map V-5

Legend

Doral City Limit

Not to Scale

Source: Miami-Dade County Evaluation and Appraisal Report (adopted October 28, 2003).

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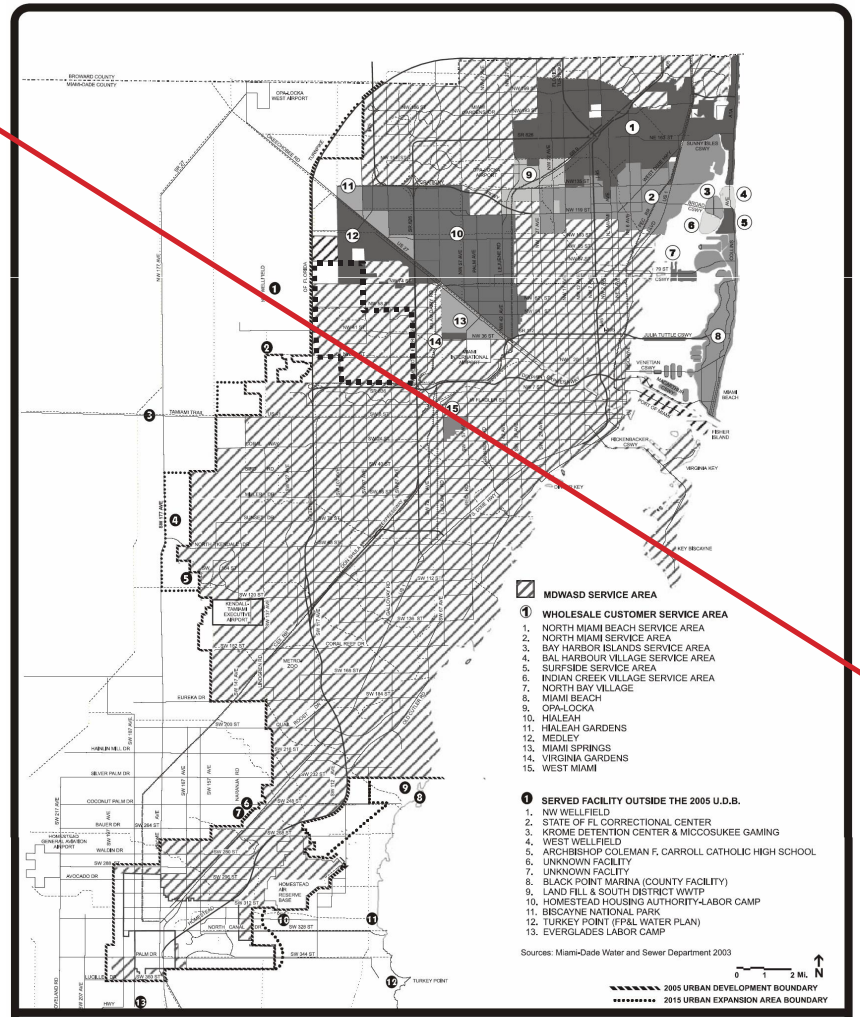

Figure 2.5.1-1

2003 MDWASD WATER SERVICE AREAS

DEPARTMENT OF PLANNING AND ZONING

CITY OF DORAL

Miami-Dade County WASD Water Service Areas

Map V-6

Legend

Doral City Limit

Not to Scale

Source: Miami-Dade County Evaluation and Appraisal Report (adopted October 28, 2003).

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~~TABLE 5-3. EXISTING AND PROJECTED POTABLE WATER DEMAND FOR THE CITY OF DORAL~~

~~Year~~	~~Doral Population~~	~~Population Served~~	~~Generation Rate~~	~~Average Demand (MGD)~~
~~2000~~	~~23,925~~	~~23,925~~	~~200 gal/capita/day~~	~~4.79~~
~~2003~~	~~24,177~~	~~24,177~~	~~200 gal/capita/day~~	~~4.84~~
~~2004~~	~~24,431~~	~~24,431~~	~~200 gal/capita/day~~	~~4.89~~
~~2005~~	~~24,686~~	~~24,686~~	~~200 gal/capita/day~~	~~4.94~~
~~2006~~	~~24,943~~	~~24,943~~	~~200 gal/capita/day~~	~~4.99~~
~~2007~~	~~25,203~~	~~25,203~~	~~200 gal/capita/day~~	~~5.04~~
~~2008~~	~~25,466~~	~~25,466~~	~~200 gal/capita/day~~	~~5.09~~
~~2009~~	~~25,731~~	~~25,731~~	~~200 gal/capita/day~~	~~5.15~~
~~2010~~	~~25,999~~	~~25,999~~	~~200 gal/capita/day~~	~~5.20~~
~~2011~~	~~26,270~~	~~26,270~~	~~200 gal/capita/day~~	~~5.25~~
~~2012~~	~~26,544~~	~~26,544~~	~~200 gal/capita/day~~	~~5.31~~
~~2013~~	~~26,821~~	~~26,821~~	~~200 gal/capita/day~~	~~5.36~~
~~2014~~	~~27,100~~	~~27,100~~	~~200 gal/capita/day~~	~~5.42~~

~~*Source: Kimley-Horn & Associates, Inc., 2004*~~

~~EXISTING AND PROJECTED AGRICULTURAL WATER DEMANDS~~

~~The Existing Land Use Map for the City of Doral identifies 300 acres of existing agricultural uses within the city's limits. Using an average irrigation demand of 3,600 gal/ acre /day, the existing agricultural water use demand is 1.08 MGD. The Future Land Use Map for the City of Doral does not show any agricultural land uses. Therefore, agricultural water demand is expected to decline over the next ten years as agricultural land is developed and converted to other land uses.~~

~~EXISTING AND PROJECTED PARK AND RECREATION WATER DEMANDS~~

~~The Existing Land Use Map for the City of Doral identifies 919 acres of existing park and recreation uses within the city's limits. Using an average irrigation demand of 3,600 gal/ acre /day, the existing park and recreation water use demand is 3.31 MGD. The Future Land Use Map for the City of Doral shows 990 acres of park and recreation land uses. Therefore, park and recreation water demand is expected to increase to 3.56 MGD over the next ten years.~~

~~EXISTING AND PROJECTED COMMERCIAL/ INDUSTRIAL WATER DEMANDS~~

~~As the population increases, the City of Doral will experience growth in commercial and industrial land uses. The water use rate of 200 gal/ capita/ day in Table 6-4 is anticipated to include this commercial and industrial growth as well as residential growth.~~

~~The City of Doral should communicate the projected water demands for potable water, future agriculture use, and industrial use to the Miami-Dade County WASD to ensure that long term demand is reflected in WASD's reports and licenses with the SFWMD and other Federal and State agencies.~~

DATA INVENTORY AND ANALYSIS

PURPOSE

State growth management laws, as codified in Section 163.3177(6)(e), Florida Statutes (2025), require the preparation of a Recreation and Open Space Element as a component of every local government comprehensive plan. The Parks and Recreation Element catalogs the existing public and private recreation and open space facilities within the City of Doral, analyzes the inventory of recreation and open space to establish and maintain appropriate level of service standards, formulates goals, objectives, and policies to protect and preserve existing recreational areas, and provides guidelines for acquiring additional recreation and open space to ensure the City continues to meet the recreational needs of the community. ~~State growth management rules provide for the preparation of a parks and recreation space element as an *optional* element of a comprehensive plan. The City has elected to complete a parks and recreation element for inclusion in its comprehensive plan. This element catalogs the existing public and private recreation and open space facilities within the City of Doral, analyzes the inventory of recreation and open space to project an appropriate level of service standard, formulates goals, objectives, and policies to protect and preserve existing recreational areas, and provides guidelines for acquiring additional recreation and open space within the City to maintain a minimum level of service for the community.~~

As of 2025, the City of Doral maintains a diverse and growing inventory of parks and open spaces totaling approximately 348 acres. The City currently operates several community parks that provide a wide range of recreational opportunities for residents and visitors alike. These include:

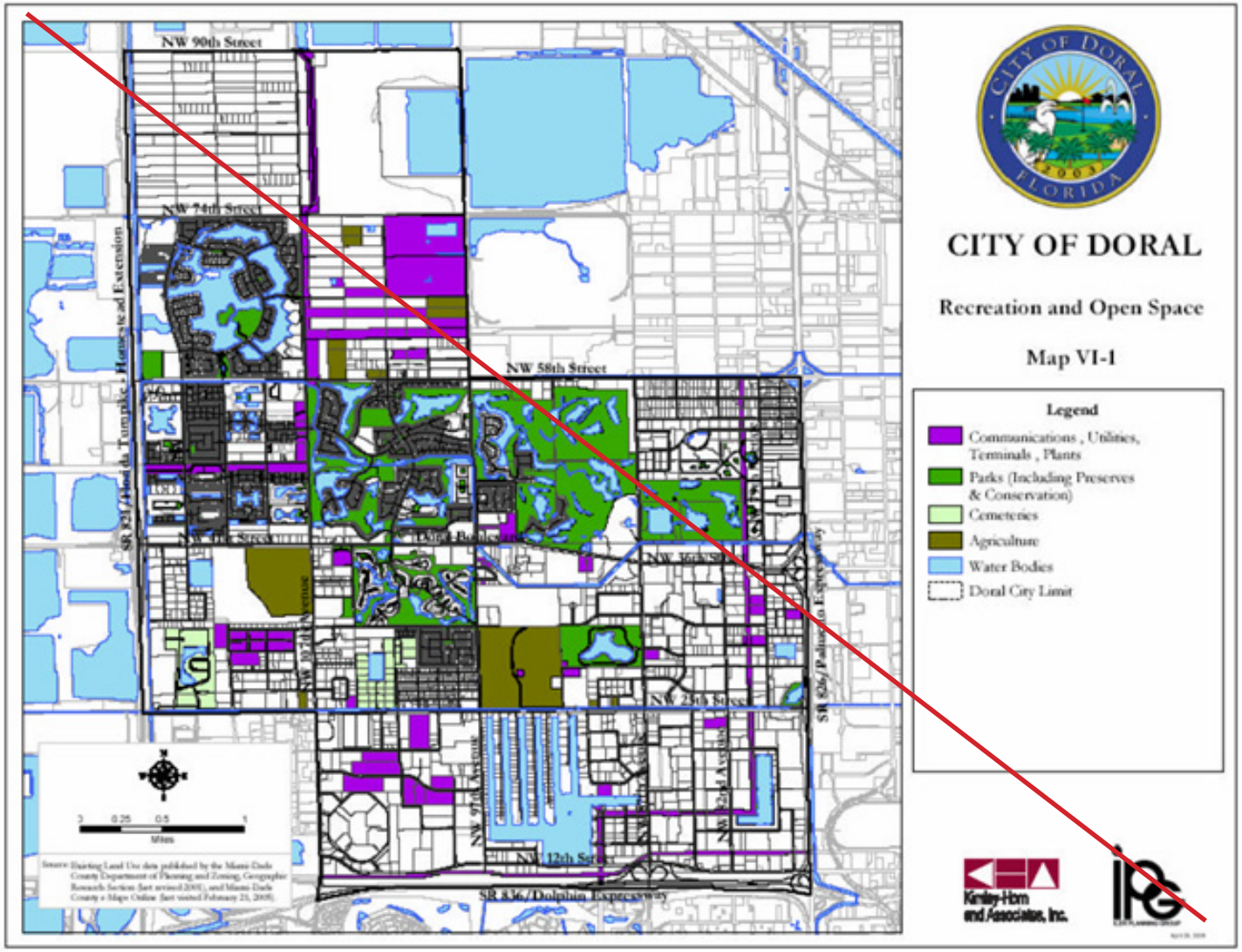
- Doral Legacy Park
- Doral Glades Park
- Doral Meadow Park
- Trails & Tails Park
- Morgan Levy Park
- Veterans Park
- Doral Central Park and Aquatic Center
- Downtown Doral Park & Doral Cultural Arts Center
- Millenia Atlantic University (MAU) Park
- White Course Park

In addition, the "Blue Monster Course" Conservation Easement, comprising approximately 184 acres, contributes significant environmental and open space value to the city.

Together, these facilities form a comprehensive network of recreational amenities and natural areas. This system supports the City's goals for health, wellness, sustainability, and quality of life. A map of these parks is provided in Map 7-1.

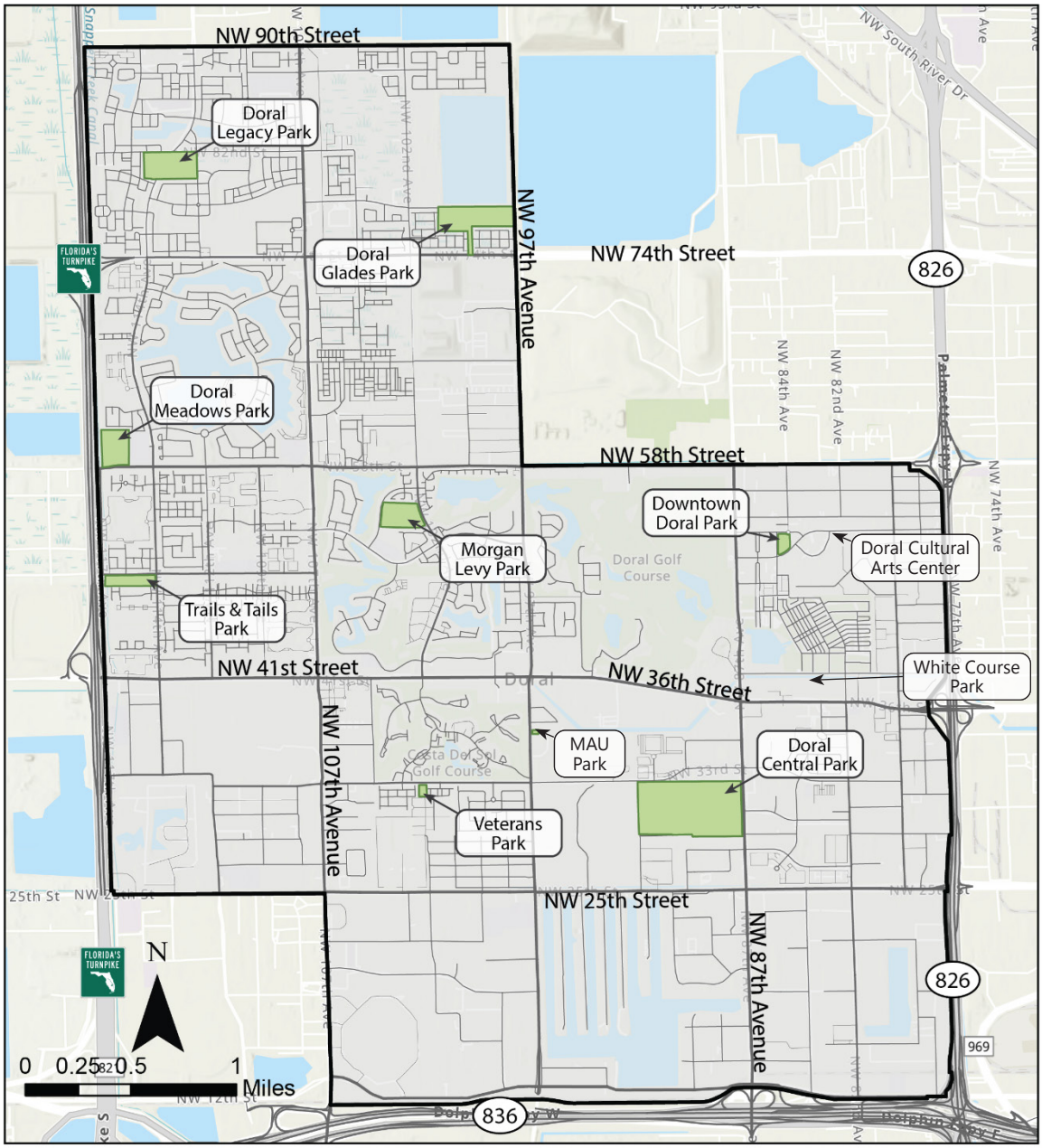
~~There are three parks within the City. The City currently controls two parks: Doral Park and Miami West Park. Miami-Dade County manages Doral Meadows Park, which is expected to be transferred to the City by the middle of 2005. These three parks are shown on the map in Map VI-1. Another 51-acre environmental park may be contributed to the City by a developer. A linear greenway and a new 26-acre park in Section 8 of the City may also be added to the inventory of park and open space in the near future.~~

MAP 7-1, RECREATION AND OPEN SPACE



City of Doral Comprehensive Plan

City Parks Map



Legend

- City Parks
- Doral Limits

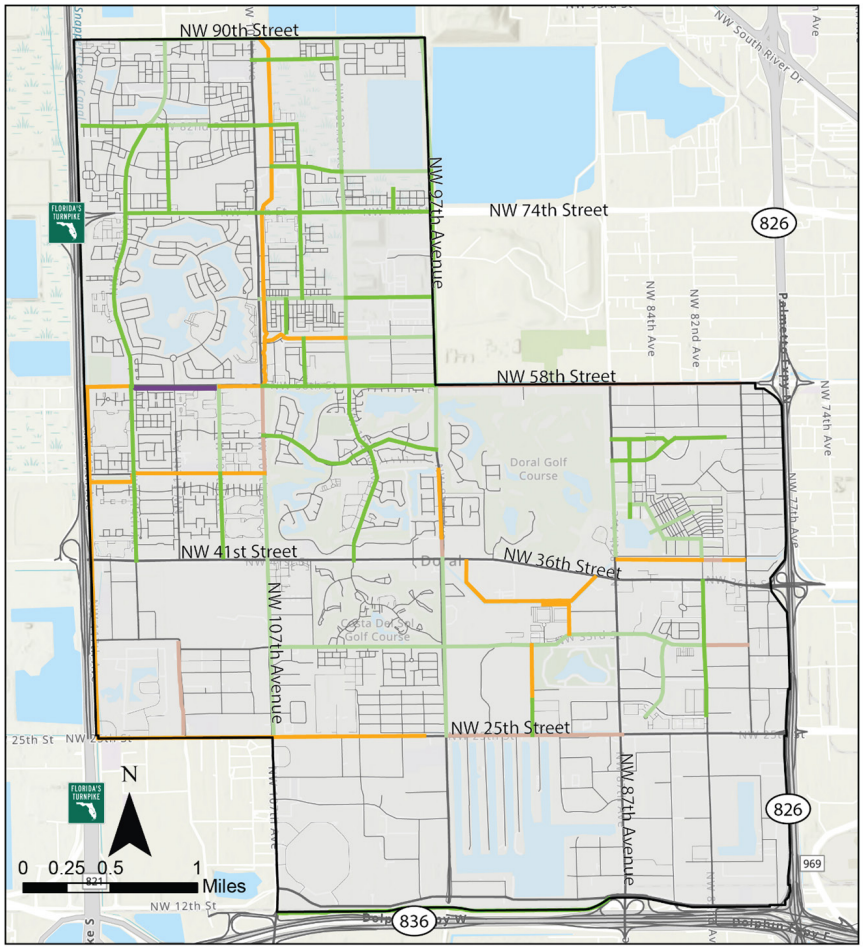
MULTIMODAL TRAILS AND BIKEWAYS

The City of Doral maintains a growing network of bicycle facilities designed to enhance connectivity, expand recreational opportunities, and support multimodal transportation options. As illustrated in Map 7-2, the system consists of a combination of completed and planned bicycle lanes, shared-use paths, and maintenance paths that together provide residents and visitors with a safe and accessible means of travel throughout the community. Completed bicycle lanes and shared-use paths are concentrated along key corridors such as NW 25th Street, NW 41st Street, NW 58th Street, and NW 87th Avenue, linking residential neighborhoods with commercial centers, schools, parks, and employment areas. Planned facilities are strategically identified to close network gaps and create continuous routes that improve both local mobility and regional trail integration.

MAP 7-2, BICYCLE FACILITIES

City of Doral Comprehensive Plan

Bicycle Facilities Map



Legend

- Bicycle Lane - Completed
- Shared-Use Path - Completed
- Bicycle Lane - Planned
- Shared-Use Path - Planned
- Maintenance Path - Completed
- Doral Limits

The continued expansion of this bicycle system supports Doral's vision of providing high-quality recreation opportunities while promoting sustainable transportation choices. By investing in both recreational and commuter-oriented facilities, the City fosters healthier lifestyles, reduces dependence on automobiles, and strengthens its overall parks and open space network. The Bicycle Facilities Map will guide future improvements and coordination with Miami-Dade County and regional partners to ensure that Doral's bicycle network remains safe, equitable, and resilient to meet the needs of a growing population.

ALIGNMENT WITH STATEWIDE OUTDOOR RECREATION PRIORITIES ~~DEFINITIONS~~

Located in the heart of Miami-Dade County, the City of Doral is experiencing rapid growth, with rising demand for high-quality parks and recreation to serve its expanding population. Consistent with the priorities of Florida's SCORP 2023–2027, the City will expand its recreation system by focusing on accessibility, connectivity, and whole-health benefits. This approach includes enhancing pedestrian and bicycle connections between neighborhoods and parks through Complete Streets and greenway initiatives, and ensuring that facilities are inclusive for residents of all ages and abilities.

Doral will further implement SCORP principles by leveraging its role as a business and tourism hub to strengthen recreation-based economic opportunities. The City's strategy includes linking trail networks to commercial centers, promoting cultural and heritage-based recreation in public spaces, and prioritizing resilient green infrastructure in new development. Through these initiatives, the Parks and Recreation Element establishes a framework for equitable, connected, and sustainable recreation opportunities that enhance residents' quality of life while supporting long-term economic vitality and environmental stewardship.

FIGURE 7-1, SCORP OUTDOOR RECREATION PRIORITIES AND RECOMMENDATIONS

~~The following is a list of recreational definitions that are referenced throughout this element, and are based on *Outdoor Recreation in Florida-2000: Florida's Statewide Recreation Plan* produced by the Florida Department of Environmental Protection Division of Recreation and Parks:~~

1. ~~**Urban Open Space.** Urban open space areas are landscaped or natural open areas, located in built environments, and are typically between one-tenth and one acre in size. These areas can serve a one to two block area, or the entire City depending on their location. Examples of urban open space areas include pocket parks, boulevard medians, plazas, courthouse squares, and promenades. Their typical function is to add relief to congested areas. Because of their size they are typically limited in terms of amenities, but may include such items as benches, commemorative structures, trails and pathways.~~

2. ~~**Equipped Play Area or "Tot Lot".** Equipped play areas "Tot Lots" are open areas that generally include some or all of the following: play structures, benches, picnic tables, landscaping, and open space. Tot Lots are a minimum of one acre in size; however they can be as small as ¼ of an acre if they are adjacent to an existing recreation facility or elementary school. These parks serve neighborhoods of between 500 and 2,500 people.~~

3. ~~**Neighborhood Park.** Neighborhood parks are a minimum of five acres in size; however, they may be as little as two acres if adjacent to a school. These parks are typically accessed by pedestrians and bicyclists, and are generally located on streets with sidewalks and bike lanes that limit encounters with vehicular traffic. These parks are usually between five and ten acres in size, provide service for up to 5,000 people, and are designed for intense and diverse recreational activities. Amenities may include, but are not limited to, play structures, recreation buildings, multipurpose courts, sports fields, picnic areas, and free play areas.~~

4. ~~**Community Park.** Community parks are typically accessed by motor vehicles, are located near major streets, and are designed to provide service for up to six neighborhoods (25,00 people). A minimum of 20 acres is recommended for a community park; however, the recommended acreage can be reduced to five acres if the park is adjacent to a junior or senior high school. Typical facilities for a community park may include, but are not limited to, swimming pools, ball fields, tennis courts, play areas, picnic areas, multipurpose courts, recreation buildings, and sports fields. Landscaping and passive recreation activity areas are crucial amenities of a community park.~~

5. ~~**Urban-District Park.** An urban-district park is designed to serve several communities, a city or a county, and should serve an average population of 50,000. Typical facilities may include natural areas, campgrounds, and play structures. This park must be a minimum of 50 acres in size; however, the optimal size would be 75 or more acres.~~

6. ~~**Regional Park.** Regional parks are large areas designed to serve two or more communities or counties, and should serve a minimum of 100,000 people. The size of these parks range from a minimum of 250 acres to several thousand acres. Facilities provided at regional parks typically include water-based recreation areas, camping areas, hiking/nature trails, and picnic areas.~~

7. ~~**Passive Park.** A passive park is a recreational area that encourages activities that do not necessarily raise the heart rate significantly above the normal resting rate; however, these parks do provide the user with enjoyment through the visual aesthetics of a natural environment. Typical amenities for these types of parks may include picnic tables, observation areas, botanical gardens, historical or archaeological sites, and benches. These types of parks include open spaces such as fields, walking/nature trails, and scenic vistas.~~

8. ~~**Active Park.** An active park is a recreational area that encourages active participation involving physical exertion that raises the heart rate significantly above the normal resting rate. Typical activities for these types of parks may include, such group activities as football, baseball, soccer, basketball, tennis, and shuffleboard, as well as individual activities such as jogging, bicycling, hiking, swimming, and playground activity. The typical amenities for these parks promote the aforementioned activities, and may also include passive park amenities such as picnic tables and open space.~~

Table 7-1 ~~6-1~~ provides the guidelines established by the County ~~State~~ for outdoor recreation. ~~found in "*Outdoor Recreation in Florida – 2000: Florida's Statewide Comprehensive Outdoor Recreation Plan.*"~~

TABLE 7-1, PARK CLASSIFICATION CRITERIA AND SERVICE AREAS

Classification	Primary Use	Staffing	Programming	Acreage	Service Area
Areawide	-	-	-	-	-
Metropolitan	Resource	Yes	Yes	200+	Countywide
Natural Area Preserve	Resource	No	No	2+	Countywide
Special Activity Area	Resource	Yes	Yes	n/a	Countywide
District	User	Yes	Yes	100 to 200	5 miles
Greenways	User	No	No	n/a	Countywide
Local	-	-	-	-	-
Community	User	Yes	Yes	30-100	3.5 miles
Single-Purpose	User	No	Yes	5+	3 miles
Neighborhood	User	No	No	5 to 10	1 mile
Mini-Parks	User	No	No	<=1	.5 mile

Source: Miami-Dade County Parks, Recreation and Open Space Department

~~TABLE 6-1, SITE GUIDELINES FOR COMMUNITY OUTDOOR RECREATION RESOURCES/FACILITIES~~

~~Park Facility~~	~~Location~~	~~Population Served~~	~~Area Per 1000 Population~~	~~Park Size if Next to School~~	~~Size as a Separate Park~~	~~Facilities~~
~~Urban Open Space~~	~~Urban Areas~~	~~0.25- 0.5 mile~~	~~1 acre~~	~~n/a~~	~~Min. of 0.1 acre~~	~~Resource-based recreation area~~
~~Equipped Play and Tot Lot~~	~~<0.25 mile in residential setting~~	~~2,500 max.~~	~~.5 acre~~	~~Min. of 0.25 acre~~	~~Min. of 1 acre~~	~~Play structures, benches, picnic areas, open spaces, landscaping~~
~~Neighborhood Park~~	~~Neighborhood Area: 0.25—0.5 mile distance~~	~~5,000 max.~~	~~2 acres~~	~~Min. of 2 acres~~	~~Min. of 5 acres~~	~~Play structures, recreation buildings, court games, hard courts, tennis courts, internal trails, shuffleboard, volleyball courts, picnic areas, open area, landscaping~~

Park Facility	Location	Population Served	Area Per 1000 Population	Park Size if Next to School	Size as a Separate Park	Facilities
Community Park	Usually serves two or more neighborhoods and 0.5 to 3 miles distance	5,000 max.	2 acres	Min. of 5 acres	Min. of 20 acres; optimal is 20-50 acres	All of the facilities found in a neighborhood park plus informal ball fields, swimming pools, archery ranges, golf areas, ornamental gardens, open space and facilities for cultural activities
Urban District Park	In large urban area or periphery within 30-40 minute drive	One park per 50,000	5 acres	n/a	Min. of 50 acres; optimal is 75+ acres	Play structures, restrooms, trails, nature center, boating, swimming, picnic areas, sports fields
Regional Park	Periphery of an urban area 30-60 minute dive	>100,000	20 acres	n/a	250 acres to several thousand acres	Camping, nature and bridle paths, picnicking, and other facilities non- intensive development

Source: Florida Department of Environmental Protection, Division of Recreation and Parks, Outdoor Recreation in Florida-2000: Florida's Statewide Recreation Plan.

CITY OF DORAL PARKS SYSTEM MASTER PLAN (2017)

The 2017 Parks and Recreation Master Plan establishes an important foundation for Doral's long-range planning framework. Its findings highlight the City's parkland deficit relative to adopted level of service standards and emphasize that continued population growth will further exacerbate the shortfall unless proactive measures are taken. By identifying Doral Central Park as a regional-scale anchor and outlining strategies for smaller infill parks and greenway linkages, the plan provides a clear framework for expanding recreational opportunities despite limited land availability. Equally significant are the recommendations related to connectivity and accessibility, which directly align recreation planning with the City's broader transportation and mobility goals.

The Master Plan also underscores the importance of equitable distribution of facilities and the provision of universally accessible amenities, ensuring that all residents, regardless of age, ability, or neighborhood, can benefit from recreational resources. In November 2018, voters in the City of Doral approved a $150 million General Obligation Parks Bond to expand, upgrade, and enhance the City's parks and recreation infrastructure. This bond was a direct response to the findings of the 2017 Parks & Recreation Master Plan, which showed that Doral's park level of service (LOS) lagged behind adopted benchmarks, with existing provision at about 2.24 acres per 1,000 residents, far below the target of 4.5 acres per 1,000. As of 2025, the City has provided a LOS of 4.02.

EXISTING CONDITIONS

The City of Doral maintains a robust network of parks and open spaces that collectively provide residents and visitors with high-quality recreational opportunities. The system encompasses approximately 347.87 acres across eleven park sites, ranging from community and neighborhood parks to specialized facilities and conservation areas. Table 7-2 summarizes public parks and open space facilities, including the name, address, size, classification, and features of each site.

The inventory of recreation and open space areas indicates that the City of Doral contains approximately 109 acres of parks and open space at three locations. This total does not include private open space such as golf courses and county club/resort areas. Table 6-2 provides a detailed inventory of the three park and open areas, including name and address, park class, park size, park type, and amenities.

TABLE 7-2. PUBLIC PARK AND OPEN SPACE FACILITIES IN THE CITY OF DORAL

Name	Address	Acres
Doral Legacy Park	11400 NW 82 ST	17
Doral Glades Park	7600 NW 98 PL	24.8
Doral Meadow Park	11555 NW 58 ST	14
Trails & Tails Park	11645 NW 50 ST	8.12
Morgan Levy Park	5300 NW 102 AVE	14
Veterans Park	10190 NW 33 ST	1.32
Doral Central Park and Aquatic Center	8395 NW 53 ST	78
Downtown Doral Park and Doral Cultural Arts Center	8395 NW 53 ST	4.21
Millenia Atlantic University (MAU) Park	3719 NW 97 AVE	0.68
White Course Park	8429 NW 41 ST	2.95
Flightway Retention Passive Park	NW 102 AVE & NW 62 ST	3
Linear Greenway Park	NW 50 ST & NW 107 AVE	29.5
Total		**197.58**

TABLE 7-3 PASSIVE PARKS IN THE CITY OF DORAL

Name	Address	Acres
"Blue Monster Course" Conservation Easement	4400 NW 87 AVE	184
Nature Preserve Conservation Easement	NE & SE Corner of NW 74st & NW 107 Ave	48.52
Flightway Ten Development	6330 NW 99 AVE & 6330 NW 99 AVE	7.28
Total		**239.80**

TABLE 7-4~~3~~ PRIVATE PARK AND OPEN SPACE FACILITIES IN THE CITY OF DORAL

Type	Acres	% Allowed	Acres Counted
Private Recreational Facilities Associated with private Residential Developments, except marinas/yacht basins, includes landscape and open spaces associated to residential, commercial and office developments.	89.53	50%	44.77
Private Recreational Camps/Areas not associated with private Residential Developments (Boy Scout/Girl Scout Camps, Private Recreational Camps). Includes private tennis courts and pools that are part of the recreational complex.	0.67	50%	0.34
Golf courses	538.32	0%	0
Cemeteries	157.57	0%	0
Total			**45.10**

PARKS & RECREATION SYSTEM

The Parks & Recreation Department operates and maintains these facilities, offering safe, clean, and accessible spaces open seven days a week, including most holidays. The system serves over one million annual users, offering a broad mix of sports, cultural programs, family-friendly events, and wellness activities. Amenities across the system include:

- Lighted athletic fields and courts for soccer, baseball, basketball, tennis, and volleyball.
- Walking/jogging trails, bikeways, exercise stations, batting cages, and shaded playgrounds.
- Dog-friendly off-leash areas, splash pads, and picnic pavilions available for rental.
- Indoor community centers offering fitness rooms, classrooms, and cultural spaces.

The Department also coordinates competitive and recreational leagues, Special Olympic sports, and senior programming, while organizing 20+ cultural and community events annually with over 50,000 attendees. Staff support extends to co-sponsored civic events, and the Department serves ~~as liaison~~ City advisory boards (Youth Civic Engagement Committee, Special Needs Advisory Board & Parks & Cultural Advisory Board. Along with the City's 501C3- Parks & Police 4 Kids).

FACILITY HIGHLIGHTS

While many facilities share common amenities, several parks stand out for their unique features:

- Doral Central Park & Aquatic Center (78 acres): The City's largest park, featuring a wellness campus, amphitheater, multipurpose fields, lakefront promenade, skate park, and the newly opened state-of-the-art Aquatic Center (2025) with Olympic-size and training pools, splash pad, and spectator seating. The amphitheater, managed by Loud And Live, hosts concerts and cultural festivals with a capacity of nearly 4,700.
- Doral Legacy Park (18 acres): A hub for sports and cultural arts with a community center, multiple athletic courts and fields, pickleball, splash pad, and pavilion rentals.
- Doral Glades Park (25 acres): Known for its nature center, fishing pier, kayak launch, and environmental education programming.
- Trails & Tails Park (8.3 acres): The City's first dog-friendly facility with dedicated large and small dog areas, dog wash stations, and shaded play areas.
- Morgan Levy Park (14 acres): A popular athletic complex with lighted fields and tennis courts, serving tens of thousands of soccer participants each year.
- White Course Park (2.96 acres): Built on a former golf course, featuring a putting green that honors Doral's golf history.
- Veterans Park, Downtown Doral Park, and MAU Park (4.96 acres): Smaller neighborhood and passive parks that provide shaded play areas, picnic lawns, and civic gathering spaces.
- "Blue Monster Course" Conservation Easement (184 acres): Preserved open space contributing to the City's ecological and recreational balance.

Doral's parks and recreation system reflects the City's commitment to community wellness, inclusivity, and cultural enrichment. With a balance of large community facilities, smaller neighborhood parks, and preserved natural areas, the system offers diverse opportunities for active recreation, passive leisure, and environmental education. As the City continues to grow, these facilities form the foundation for expanding access, improving connectivity, and enhancing quality of life for residents and visitors.

~~Doral Park and Miami West Park are both maintained by the City. Miami Dade County will continue to maintain Doral Meadow Park until it is transferred to the City in the middle of 2005.~~

~~Doral Park lies south of NW 58th Street between NW 107th Avenue and NW 97th Avenue and consists of 14 acres of park space. It is adjacent to Doral Middle School It is an active park with tennis courts, play structures, and a pathway. The 2005 budget allocates $100,000 for a master plan for Doral Park. New amenities considered are a lighted vita course/jogging path, irrigation and lighting of the existing open field, two new soccer/multipurpose fields, renovation of concession building, picnic facilities, two new lighted basketball courts, park furniture, and parking. The Five Year Schedule of Capital Improvements- FY 2006-2010 shows plans for investing $2 million and $1.9 million in FY06 and FY07 respectively for design, engineering and improvements.~~

~~Miami West Park lies along NW 87th Avenue between NW 25th Street and NW 41st Street. This 81-acre park has a pathway, freshwater lake, and play structure. A lighted baseball complex and picnic facilities are expected to be completed in 2005. The City will seek design services for a master plan for Miami West Park for future improvements.~~

~~$6.1 million has been allocated through a Miami-Dade County General Obligation Bond, a grant through the Safe Neighborhoods Parks Bond Program, and the Florida~~

~~Development Assistance Program. According to the Five Year Schedule of Capital Improvements- FY 2006-2010, $15 million is planned for Phase I improvements.~~

~~Doral Meadows Park is located at the corner of NW 58th Street and NW 117th Avenue adjacent to Eugenia Thomas Elementary School. This 14-acre park has soccer fields and a pathway. Work on Doral Meadows Park will occur in two phases. Phase I, which began in 2004, include improvements funded with $1.5 million from the Miami-Dade County Quality Improvement Program and $300,000 from the City of Doral. Phase I improvements include a recreation center, restrooms, concession area, field lights for the soccer fields, and parking lot lighting. Phase II improvements will be funded by $1 million has been allocated in the City's 2005 budget, $600,000 from the Safe Neighborhood Parks Bond Program, and $400,000 from the Florida Recreation Development Assistance Program. Phase II Improvements include a lighted vita course, picnic shelter, recreation building aesthetic improvements, and a new tot lot. Phase II improvements are expected to total $3 million through 2010.~~

~~A developer may contribute a 51-acre parcel for use as a passive park with facilities for environmental education. The Five Year Schedule of Capital Improvements- FY 2006- 2010 shows $500,000 allocated for this park in FY09 and FY10.~~

~~Two other potential park projects include a Linear Greenway and a Community Park in the Section 8 of the City costing $750,000 and $15 million respectively.~~

PARK AND RECREATION ANALYSIS

There are 404.88 ~~109~~ acres of public park land in the City. With a 2025 ~~2005~~ population of 86,615 ~~33,633~~, Doral has an existing ~~a~~ Level of Service of 4.67 ~~3.24~~ acres per 1,000 residents. ~~While this~~ This figure surpasses Miami-Dade County's requirement~~,~~ of 3.0 ~~2.7~~ acres per 1,000 residents~~, City residents expressed an interest in increasing park space, particularly small neighborhood parks and park facilities~~.

~~The City is currently seeking improvements to existing parks. Doral Park is expected to receive a lighted vita course/jogging path, multipurpose fields, basketball courts, park furniture and signs. Miami West Park is expected to receive a baseball complex, picnic facilities, and a master plan for optimum use of the land for recreational purposes. The Doral Meadow Park is expected to receive baseball fields, play structures, vita course/jogging path, and landscaping.~~

~~The City received input from a Parks and Recreation Committee and through a number of public workshops on the Parks and Recreation Element of the comprehensive plan. This grass-roots effort and extensive public participation can provide the basis for Park and Recreation Element policies. The results of the Committee's report and survey and public workshops are discussed here.~~

~~COMMITTEE ON PARKS AND RECREATION REPORT~~

~~The Committee of Parks and Recreation consisted of five members including a City Council Liaison. Their February 2004 report "Recommendations to the City of Doral from the Committee of Parks and Recreation" included suggestions on park personnel, park space, maintenance, revenues, and results of a resident survey.~~

~~The Committee suggested the parks director should have skills in recreational activities and park development. Hiring part-time employees, outsourcing or delegating maintenance to the Public Works Department are all potential resources for maintenance personnel. Above all, the method of providing personnel for maintenance should be cost- efficient.~~

~~The Committee felt adding to existing park space was essential. Existing open spaces not designated as park such as utility and canal easements could be used for linear parks and neighborhood playgrounds. Also, land acquisition by the City and developers' contributions of park space should also be considered. A Public Land Trust Fund should be established for acquisition and development. Interlocal agreements with the Miami- Dade School Board for use of school property for programs, activities, and parking should also be investigated to expand park and recreational activities.~~

~~Public safety in parks was also a concern of the Committee. Lighting and security should be made a high priority in parks and related parking lots for City residents and visitors. Regular police patrol, securing buildings and bathrooms in the evening, and enforcement of park hours would enhance public safety. Parks should be accessible for seniors and the physically challenged.~~

~~Revenue generation is important for maintaining existing parks and for acquiring and developing new parks. Committee members suggested collecting fees from rental facilities such as pavilions and amphitheaters. An interactive water park might also produce funds for the City. Grants from various agencies should be pursued and membership in the Florida Recreation and Parks Association might increase access to grant information. Reasonable, yet revenue-generating fees for City park and recreation programs should be charged. However, program costs for low-income seniors should be subsidized.~~

~~The Committee also suggested that a Parks Master Plan should guide the City's parks and plans. A Parks Master Plan would drive future park development and specify appropriate facilities.~~

~~The Committee also conducted a survey to determine concerns regarding the City's parks. The results are listed in Table 6-3 below:~~

TABLE 6-3, COMMITTEE OF PARKS AND RECREATION PARK SURVEY RESULTS

Age of Survey Respondents:	Park Used Most Often:	Days and Times Park Most Used:
18-30 43% 31-45 38% 46-65 13% 65+ 6%	Doral Park 89% Doral Meadows Park 7% Miami West Park 4%	Morning 6% Weekdays 25% Afternoon 85% Weekend 75% Evening 9%
Activities Enjoyed in the Park:	**Primary Concerns for Existing Parks:**	**Ideas to be Considered:**
Walking 17% Running 14% Swimming 4% Organized sports 30% Basket ball 5% Tennis 9 % Playground 9% Picnic 4% Reading/relaxing 5% Walking the Dog 1% Other 2%	Parking 5% Lighting 33% Safety/Security 8% Pathways 2% Improved access 1% Shelter building 2% Landscaping 2% Restrooms 12% Basketball/Tennis Court Conditions 11% Playing field Conditions 22% Natural Resources 2%	Barbecue/picnic shelters 14% More Seating 7% Interactive Water Playground 25% Swimming Pool 11% Skating Areas 8% Stage or Performance Area 4% Party Rentals 7% Temporary Restrooms 10% After school/summer programs 13% Other 1%

Source: Committee on Parks and Recreation, 2004.

WORKSHOP SUMMARY

Four community visioning workshops were held in 2004 for development of the City's comprehensive plan. Details of the workshops can be found in the Appendix. The July 26, 2004 workshop focused on Parks and Recreation. Discussion at the workshop covered a wide array of parks issues including funding, location of new parks and facilities; desired park facilities; park amenities and programs and level of service standards. A summary of each issue is provided below:

Funding

It was agreed at the workshop that additional/alternative funding sources to add new parks, facility improvements, and programs were needed. Also, new development should pay its fair share for the parks system. Methods of funding included:

- Maximizing grant/legislative opportunities
- Approaching State for park funding assistance
- Negotiating with State and Federal governments for more land for parks
- New developments contributing to the park system
- Encouraging private contributions for park improvements including a "Adopt-a- Park" program
- Creating Land bank for future parks needs

Location

Discussion about park locations focused on finding a good location for a community center and spreading a number of smaller parks throughout the community. Workshop suggest included:

- Finding location for Community Center

- ~~Locating small parks near/in neighborhoods~~
- ~~Creating passive linear park opportunities~~
- ~~Developing parks in commercial for employees to have lunch in~~
- ~~Filling in a portion of lakes to provide additional park land at NW 12th Street location and Miami West Park~~
- ~~Identifying potential properties in good locations for future parks and consider the use land banking to purchase property for future parks~~

~~Type of Parks Facilities~~

~~Workshop participants stated that more facilities for all parks activities were needed. Ideas generated at the workshop included:~~

- ~~Adding more active park facilities and passive parks~~
- ~~Focusing on small parks (e.g., pocket parks of less than 1 acre), closer to neighborhoods and employment centers~~
- ~~Developing park facilities and programs needed for all ages and abilities~~
- ~~Using linear parks to fill some of the passive park need.~~
- ~~Increasing connectivity through safe routes and FPL easements~~

~~Park Amenities/Park Programs~~

~~The participants discussed a number of specific active and passive park improvements and programs including the following:~~

- ~~Amenities~~
  - ~~Shelters/gazebos~~
  - ~~Interpretive landscape demonstration areas for native plants~~
  - ~~Arboretum~~
  - ~~Amphitheater~~
  - ~~Dog parks~~
- ~~Programs~~
  - ~~Programmed activities needed~~
  - ~~Public art program~~
  - ~~Community festivals~~
  - ~~Green markets~~
  - ~~Art festivals/"Art in the Park"~~

Level of Service

The City of Doral ~~Miami-Dade County~~ has a Parks Level of Service (LOS) standard of 3.0 ~~2.75~~ acres of public park land per 1000 population. ~~There were discussions at the July 2004 workshop as to whether this LOS should be maintained for the City of Doral or revised. Participants agreed that a high park level of service should be set and that 4.25 acres of park land per 1000 population would be appropriate~~.

LEVEL OF SERVICE (LOS) STANDARDS

While the City has three large, community parks, there are few public parks and open spaces within neighborhoods or within commercial areas. Based upon input from City leaders and residents, the City should consider a Level of Service for community parks and neighborhood parks to encourage the availability of park space throughout the City.

The City of Doral's ~~Miami-Dade County's~~ parks and recreation Level of Service (LOS) standard is 2.75 acres of private park area for every 1,000 residents. For its public parks, the City maintains an existing level of service of 3.0 acres of park area for every 1,000 residents. Historically, the City has maintained

the following public parks level of service: ~~While gathering the parks and recreational data for this element, the parks and recreation LOS standards established for other cities were also collected for comparative purposes. These include a Level of Service standard of 2.9 for Pinecrest, 6.2 for Coral Gables, 3.7 for South Miami and 4.63 for Miami Lakes. These higher service levels are considered more in keeping with what the City of Doral envisions as the standard for its parks and recreation system. It has been determined that the City currently has a 3.24 actual LOS. During a community visioning workshop, residents suggested the overall Level of Service should be set at 4.25 acres in order for the City to achieve and maintain ample park and open space in the City. It may be reasonable to increase the Level of Service incrementally over the twenty year planning horizon.~~

2012–2014: 3.75 acres of developed park land per 1,000 residents

2015–2020: 2.25 acres of public park land per 1,000 residents

2020–2025: 3.00 acres of public park land per 1,000 residents

Considering population projections, the City will have a surplus of ~~would need to acquire~~ 20.67 ~~252~~ acres of park land by 2050 ~~2015~~ to achieve the 3.0 ~~4.25~~ acre level of service. Already, the City foresees increasing existing park space through the Planned Parks Projects FY 2024-2029 ~~future~~ of Linear Greenway Park (29.5 acres) and a Flightway Retention Passive Park (3 acres), which is expected to ensure the parks level-of-service is in compliance through 2050. ~~a 51-acre environmental passive park, a linear greenway, and a new 26-acre park in Section 8 of the City~~.

Additionally, the City intends to ~~could~~ overcome future deficiencies by securing the use of additional lands that lend themselves for park use, such as the Florida Power and Light easements, developer contributions, recreation fees, other public lands. ~~The City may also consider adding a portion of existing private open space~~ (864) ~~in its level of service calculations. The new parks, existing private open space, and other methods of park and open space acquisition~~, ~~will allow the City to maintain and keep a Level of Service of 4.25~~ ~~2015~~.

TABLE 7-4, FUTURE RECREATION AND OPEN SPACE NEED

Parks Level-of-Service				
Population	Required Acres @ 3.0/1,000	Actual Acres	Surplus/Deficit	Provided LOS (ac/1,000)
2025 (86,615)	259.85	404.88	145.04	4.67
2030 (99,083)	297.25	437.38	140.13	4.41
2035 (110,124)	330.37	437.38	107.01	3.97
2040 (120,175)	360.53	437.38	76.86	3.37
2045 (129,730)	389.19	437.38	48.19	3.37
2050 (138,904)	416.71	437.38	20.67	3.15

~~TABLE 6-4, FUTURE RECREATION AND OPEN SPACE NEED~~

~~Year~~	~~Park Level of Service~~	~~Population~~	~~Park Space Needed Based Upon LOS (Acres)~~	~~Additional Park Space Needed to Maintain LOS (Acres)~~
~~2005~~	~~3.00~~	~~33,633~~	~~101~~	~~None~~
~~2010~~	~~3.25~~	~~46,266~~	~~150~~	~~41~~
~~2015~~	~~4.25~~	~~59,323~~	~~252~~	~~243~~
~~2020~~	~~4.25~~	~~72,659~~	~~309~~	~~200~~

DATA, INVENTORY, AND ANALYSIS

SCHOOL FACILITIES

Educational opportunities form a foundational pillar of the City of Doral's continued growth and quality of life. High-performing schools support a diverse and skilled workforce, increase local property values, and play a key role in shaping decisions made by families when choosing where to live. For young families, access to excellent public schools directly influences residential location, while for older adults, opportunities for lifelong learning contribute to community vitality and personal enrichment.

As a dynamic and rapidly growing city within western Miami-Dade County, Doral is home to an increasing number of school-aged children and young families. In this context, educational facilities are not only centers of learning but also essential elements of the city's social and physical infrastructure. School facility availability influences travel patterns, commute times, and traffic conditions, as well as land use and development decisions within the city.

In Miami-Dade County, public school facility planning and concurrency are addressed at the countywide level through coordination with Miami-Dade County Public Schools (MDCPS), the fourth-largest school district in the United States. The Third Amended and Restated Interlocal Agreement for Public School Facility Planning, executed among Miami-Dade County, its municipalities, and the School Board, establishes the framework for data sharing, development review, school concurrency, and long-range facilities planning.

The City of Doral actively participates in the school concurrency review process by coordinating with the School Board through its development review procedures. This ensures that new residential development aligns with available school capacity or planned improvements, maintaining the adopted level of service standard of 100% of permanent FISH capacity. The City relies on enrollment and capacity data provided by MDCPS through its annual Five-Year Facilities Work Program and supports the inclusion of this data in its own planning documents to align growth with public facility provision.

As of the 2023–2024 school year, Doral is served by seven traditional public schools operated by M-DCPS, including four K–8 centers and three high schools. In addition, the City is home to more than ten charter schools and several private educational institutions, providing a range of educational options for families. Public school enrollment within Doral reflects ongoing growth trends, with utilization rates across most facilities remaining below the adopted LOS threshold and additional student capacity planned at newer campuses such as J.C. Bermudez Doral Senior High School.

The following section provides detailed data and analysis on Doral's public school facilities, including capacity, enrollment, utilization, and planned improvements.

TABLE 8-1: PUBLIC SCHOOLS IN DORAL

Location	Address	Site Size (Acres)	Building(s) Age Range	Permanent vs. Relocatable Buildings	Actual 2023 - 2024 FISH Capacity	Actual 2022 - 2023 COFTE	Actual 2023 - 2024 Utilization	New Student Capacity	New Rooms to be Added/ Removed	Projected 2027 - 2028 COFTE	Projected 2027 - 2028 Utilization
Andrea Castillo Preparatory Academy	10201 NW 78 ST	3.95	2020	2 Permanent; 0 Relocatable	670	244	36%	0	0	658	98%
Dr. Rolando Espinosa K–8 Center	11250 NW 86 ST	8.88	2008	1 Permanent; 0 Relocatable	1519	765	50%	0	0	673	44%
Dr. Toni Bilbao Preparatory Academy	8905 NW 114 AVE	6.15	2017	1 Permanent; 0 Relocatable	1083	626	58%	0	0	550	51%
Eugenia B. Thomas K–8 Center	5950 NW 114 AVE	10.5	2001	4 Permanent; 0 Relocatable	1421	1100	77%	0	0	968	68%
John I. Smith K-8 Center	10415 NW 52 ST	5	1996	1 Permanent; 0 Relocatable	1242	839	68%	0	0	739	60%
Ronald W. Reagan/Doral Senior High School	8600 NW 107 AVE	17.14	2008	1 Permanent; 0 Relocatable	1776	1443	81%	0	0	1201	68%
J.C. Bermudez Doral Senior High School	5005 NW 112 AVE	3.07	1998	1 Permanent; 0 Relocatable	1014	851	84%	347	14	1201	88%

Sources: Florida Inventory of School Houses (FISH), 5-Year District Facilities Work Plan (2023-2024) and Miami-Dade County Property Appraiser

LEVEL OF SERVICE (LOS) ANALYSIS

In accordance with Section 163.3180, Florida Statutes, and the Interlocal Agreement (ILA) for Public School Facility Planning adopted by Miami-Dade County and its municipalities, the adopted Level of Service (LOS) standard for public schools is 100% of permanent Florida Inventory of School Houses (FISH) capacity. This threshold serves as the concurrency benchmark for determining whether adequate school capacity exists to accommodate projected student enrollment generated by new residential development.

An analysis of the 2023–2024 school year data for public schools serving the City of Doral indicates that, overall, the schools are operating within acceptable LOS thresholds. Key findings include:

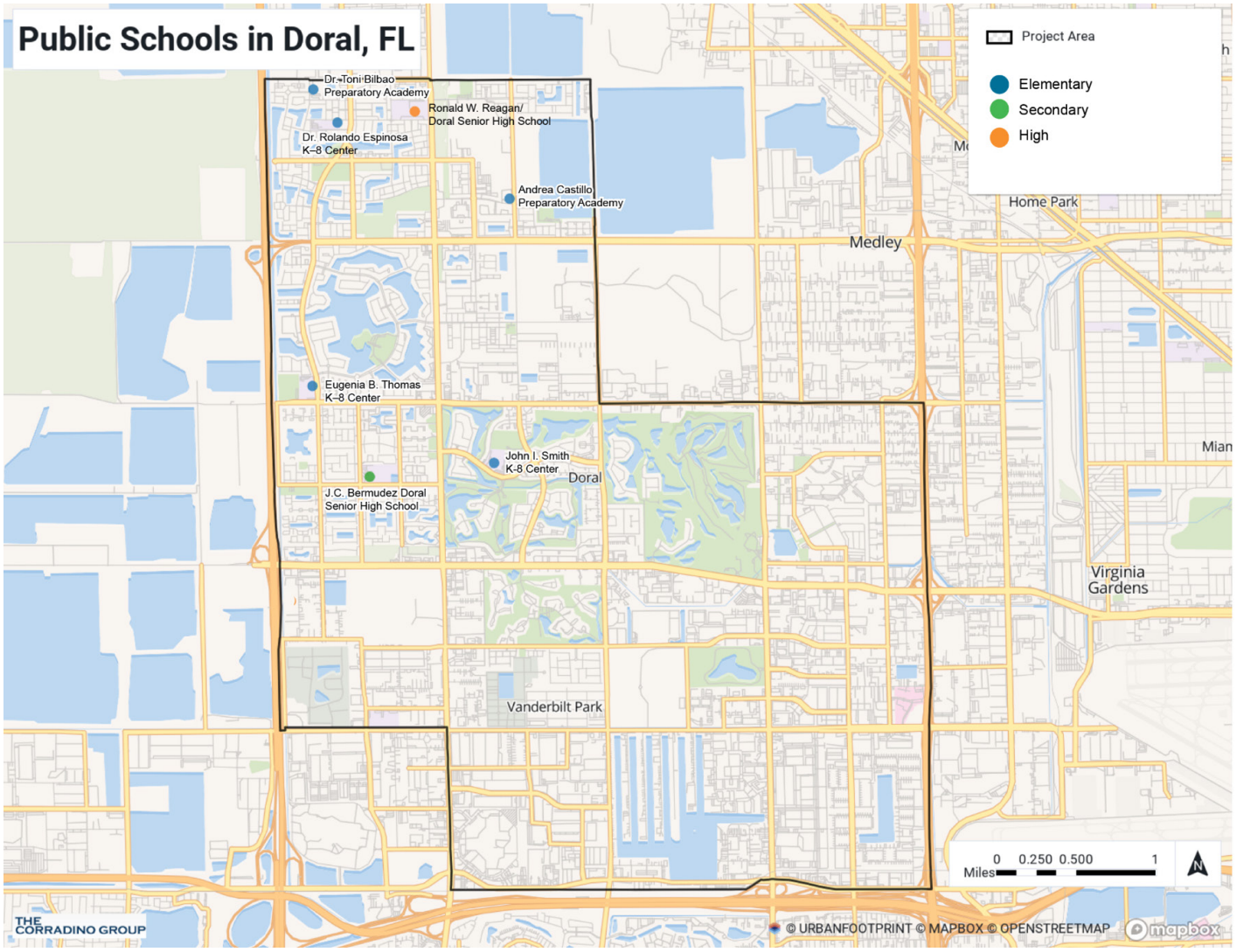
- Ronald W. Reagan/Doral Senior High School is operating at 81% utilization, with an enrollment of 1,443 students and a FISH capacity of 1,776 stations.
- J.C. Bermudez Doral Senior High School is currently at 84% utilization, with projected enrollment increasing to 1,201 by 2027–2028, reaching 88% utilization even after the planned addition of 347 student stations.
- All five K–8 centers (Andrea Castillo, Dr. Rolando Espinosa, Dr. Toni Bilbao, Eugenia B. Thomas, and John I. Smith) are operating well below the 100% LOS threshold, with current utilization rates ranging from 36% to 77%.
- Projections through the 2027–2028 school year show continued compliance with LOS standards across all

facilities, with no schools projected to exceed 90% of capacity.

While no immediate capacity shortfalls exist, ongoing monitoring is warranted, particularly for J.C. Bermudez Doral Senior High School, which is anticipated to experience growth near the upper range of available capacity. The planned classroom additions at this facility will help alleviate potential overcrowding and support continued LOS compliance.

Overall, the City of Doral's public schools are currently operating within established LOS standards, and planned facility investments appear adequate to accommodate projected enrollment increases through the five-year planning horizon.

MAP 8-1: LOCATION OF PUBLIC SCHOOLS



Source: National Center for Education Statistics, 2022-2023 Common Core of Data (CCD)

PRIVATE SCHOOLS IN DORAL

- Divine Savior Academy
- Shelton Academy

CHARTER SCHOOLS IN DORAL

- AcadeMir Charter School East
- BridgePrep Academy of Doral
- Doral Academy Charter Elementary School
- Doral Academy Charter Middle School
- Doral Academy Charter High School (Preparatory)
- Doral Performing Arts & Entertainment Academy – high school
- Doral International Academy of Math & Science
- Downtown Doral Charter Elementary School
- Downtown Doral Charter Upper School (6–12)
- Renaissance Charter Elementary School
- Renaissance Charter Middle School
- Just Arts & Management Charter Middle School

Charter schools in Miami-Dade County operate with a district-wide attendance area and are not subject to school concurrency requirements or Level of Service (LOS) standards. As such, while they play a significant role in providing school choice options to families within the City of Doral, they are not considered part of the formal concurrency evaluation for public school capacity.

DATA, INVENTORY, AND ANALYSIS

PURPOSE

The Intergovernmental Coordination Element ensures that the City of Doral Comprehensive Plan is implemented consistently with the plans and programs of other governmental entities providing facilities and services within and affecting the City. The element documents the agencies responsible for public facilities, identifies coordination mechanisms used during development review and capital planning, and evaluates the City's ability to maintain adopted levels of service where infrastructure is provided by outside agencies. Because Doral is largely dependent upon county, regional, and state infrastructure systems, particularly transportation, potable water, wastewater, drainage, solid waste disposal, schools, and emergency management, effective coordination is necessary to ensure development approvals occur concurrent with the availability of public facilities and that capital improvements remain consistent across jurisdictions.

GOVERNMENTAL SERVICE FRAMEWORK

The City of Doral provides local planning, zoning, parks, police services, and local roadway maintenance. However, most major infrastructure systems serving the City are owned or operated by agencies outside municipal jurisdiction. The City therefore functions primarily as a coordinating and monitoring entity during development review and capital improvement planning. Coordination occurs through:

- Development review referrals
- Concurrency review
- Interlocal agreements
- Regional planning participation
- Utility permitting
- School capacity coordination
- Transportation project prioritization
- Emergency management planning

City planning and public works staff serve as the primary liaisons between reviewing agencies and decision-makers.

INVENTORY OF COORDINATING AGENCIES

Miami-Dade County Departments

Multiple departments of Miami-Dade County provide facilities serving the City of Doral.

Department of Transportation and Public Works (DTPW) - Responsible for county arterial roadway operations, traffic signals, transit service, bridges, sidewalks, drainage structures, and transportation planning coordination. The department operates the county transportation network and coordinates roadway improvements and transit service expansion.

Water and Sewer Department (WASD) - Provides potable water supply, wastewater transmission, treatment, and regional capacity planning. Development approvals within Doral rely on available treatment and transmission capacity maintained by WASD.

Department of Regulatory and Economic Resources (RER) - Administers environmental permitting, floodplain regulation, wetlands review, wellfield protection, and land development environmental compliance.

Solid Waste Management Department - Provides regional waste disposal and recycling capacity serving the municipality.

Office of Emergency Management (OEM) – Miami-Dade Fire Rescue - Coordinates countywide emergency preparedness, evacuation planning, and hazard mitigation.

Miami-Dade Aviation Department (MDAD) - Operates Miami International Airport; aircraft operations create noise and land use compatibility considerations within portions of Doral.

Educational Facilities Planning

Educational facilities serving the City are operated by Miami-Dade County Public Schools. School enrollment projections, school site planning, and concurrency review are coordinated through the countywide public school facilities planning

interlocal agreement. Residential development approvals require coordination to ensure school capacity availability and safe circulation near school sites.

Transportation Planning Agencies

Miami-Dade Transportation Planning Organization (TPO) - Develops the Long-Range Transportation Plan and Transportation Improvement Program which determine eligibility for state and federal transportation funding and prioritize mobility improvements.

Florida Department of Transportation (FDOT District 6) - Plans, designs, and maintains state highways and provides regional traffic operations and signal coordination in Miami-Dade County.

Greater Miami Expressway Agency (GMX) - Operates regional expressways affecting travel patterns in Doral.

Water Management

South Florida Water Management District (SFWMD) - Regulates stormwater discharge, water supply planning, and drainage basin management. Development approvals must comply with regional water supply and surface water management criteria.

Regional Planning

South Florida Regional Planning Council (SFRPC) - Provides regional plan review to ensure local plans remain consistent with regional growth and resource management strategies.

Adjacent Municipalities

The City shares boundaries and infrastructure systems with neighboring municipalities including:

- Town of Medley
- City of Sweetwater
- City of Miami Springs
- Unincorporated Miami-Dade County

Coordination addresses roadway operations, drainage systems, land use compatibility, and development impacts along jurisdictional boundaries.

COORDINATION MECHANISMS

The City coordinates with external agencies through established procedures that are integrated into routine planning and development review activities. Development applications are transmitted to reviewing agencies including the Miami-Dade County Water and Sewer Department (WASD), the Department of Regulatory and Economic Resources (RER), the Florida Department of Transportation (FDOT), the Miami-Dade County Department of Transportation and Public Works (DTPW), and Miami-Dade County Public Schools. Agency comments are incorporated into development approvals to ensure infrastructure capacity and regulatory compliance. City staff also participate in regional transportation planning committees and review corridor improvement projects to maintain consistency between regional mobility initiatives and local land use objectives. Prior to approval of development, water and sewer availability is confirmed through WASD, and drainage permits require review by both the South Florida Water Management District and County environmental agencies. Residential development proposals are evaluated relative to projected student generation and school capacity through the countywide school planning coordination process. The City additionally participates in countywide emergency planning, evacuation coordination, and hazard mitigation implementation. Formal interlocal agreements further support coordination for school planning, emergency response, mutual aid, and infrastructure planning.

EVALUATION OF COORDINATION

Coordination within the Doral service area is ongoing and embedded within development review and capital planning procedures. Because major public facilities serving the City are provided by outside agencies, consistent coordination is necessary to maintain adopted levels of service. Effective practices include routine agency review during development approvals, participation in regional

transportation planning activities, coordination regarding school capacity, integration with county emergency preparedness programs, and verification of utility capacity prior to approval of development. Opportunities for improvement include earlier coordination during capital project programming, continued sharing of infrastructure capacity projections, enhanced cross-boundary roadway planning, and ongoing monitoring of airport compatibility considerations.

CROSS-JURISDICTIONAL ISSUES AFFECTING DORAL

The following issues extend beyond municipal boundaries and require continued coordination:

- Regional roadway congestion and freight movement
- Water supply and wastewater treatment capacity
- Floodplain management and drainage basin operations
- Aircraft noise compatibility
- School capacity planning
- Regional emergency evacuation routes
- Location of regionally significant facilities

DISPUTE RESOLUTION

When inconsistencies arise between governmental entities, the City utilizes established intergovernmental conflict resolution procedures under Florida law. Issues are typically resolved through technical coordination meetings prior to formal dispute proceedings.

EVALUATION AND MONITORING

The City of Doral relies on county, regional, and state agencies for the provision and operation of major public infrastructure systems serving the community. Accordingly, the Comprehensive Plan functions as an integrated planning framework that aligns municipal land use decisions with the capital programs, regulatory responsibilities, and service standards of those agencies. Development review procedures incorporate interagency consultation to verify the availability of public facilities and ensure that approvals occur concurrent with adequate infrastructure capacity.

Ongoing coordination, monitoring of service conditions, and continued exchange of planning information allow the City to identify potential deficiencies early and coordinate appropriate improvements with responsible providers. Through participation in regional planning activities, routine agency review, and interlocal coordination, the City maintains consistency among plans and supports the continued provision of public facilities at adopted service levels while accommodating future growth and protecting regional infrastructure systems.

INTRODUCTION

The purpose of the 2025 Capital Improvements Element (CIE) Update is to annually review and maintain the 5-Year Schedule of Capital Improvements (SCI) consistent with the requirements set forth in Subsection 163.3177(3)(b), Florida Statutes. The Updated 5-Year SCI will replace the existing capital improvement projects in the "Data Inventory Analysis (DIA)" document that supports the City of Doral Comprehensive Plan.

The 2025 CIE Update includes all capital projects for which the City has fiscal responsibility, including parks and recreation, stormwater management and transportation. The Update also includes capital improvement projects which are the responsibility of other government agencies and entities, including water supply, sanitary sewer, solid waste, public school facilities and transportation facilities. These "non- Doral" projects are funded through Miami-Dade County, Miami-Dade Public School Board, Miami-Dade Transportation Planning Organization (TPO).

This Update also provides Level of Service (LOS) analyses for all public facilities within the City based on population projections and related data. Projects included in the updated 5-Year SCI are necessary to address projected public facility needs to meet future LOS demand.

I. Population Estimates and Projections

Population projections are the foundation upon which to forecast future demand on public facilities and services. In developing Doral's population projections for this CIE update, various demographic sources including population estimates derived from the University of Florida Bureau of Economic and Business Research (BEBR), the U.S. Census, other county and regional planning documents, and city approved unbuilt units are reviewed and analyzed.

Table 1 below shows the historical, current and future estimates projections of Doral's population through the year 2040.

TABLE 1: POPULATION ESTIMATES AND PROJECTIONS

YEAR	POPULATION
HISTORIC POPULATION	
2000	20,438
2005	26,438
2010	45,709
2015	55,660
2020	75,874
CURRENT & PROJECTED POPULATION	
2025	86,615
2026	89,042
2027	91,544
2028	94,123
2029	96,780
2030	99,083
2035	110,124
2040	120,175
2045	129,730
2050	138,904

Sources: Estimates and projections by Shimberg Center for Housing Studies, based on 2010 and 2020 U.S. Census data and population projections by the Bureau of Economic and Business Research, University of Florida.

The population levels in Table 1 above are utilized as the City's current population projections for this CIE update to determine the City's public facility needs during the 5-year planning period from 2025/26 to 2029/30

II. Level-of-Service Analysis

A. Transportation

There are approximately 330 lane miles of roads within Doral maintained by three (3) separate government jurisdictions: City of Doral, Miami-Dade County and the State of Florida. Each jurisdiction provides routine maintenance of their roadways. However, all roadway traffic control such as speed limit signs, stop signs and traffic signals fall under the jurisdiction of, and are maintained by, Miami-Dade County. Doral maintains approximately 76 miles of roadway. Over the years, the city has taken over maintenance jurisdiction for many public roads and streets in Doral through inter-local agreements with Miami-Dade County. The expressways surrounding Doral on three (3) sides are: State Road 826/ Palmetto Expressway along the eastern border (Florida Department of Transportation), State Road 836/Dolphin Expressway along the southern border (Greater Miami Expressway Authority), and State Road 821/Homestead Extension of the Florida Turnpike (HEFT) along the western border (Florida Turnpike Enterprise).

The City completed most recent update of its Transportation Master Plan (TMP) and was adopted in October 2024. Comprehensive planning can yield functional transportation infrastructure that is responsive to its context. By combining the eclectic insights of professionals, residents, and interest groups, transportation planning can result in public facilities and programs that support community goals, provide safe and efficient movement of people and goods, enhance the economy, and protect the natural environment. The TMP is a long-range 20-year plan that guides Doral's mobility improvements within the City and with regional destinations.

The 2024 TMP inventoried and analyzed Level of Service (LOS) for existing roadways and projected future roadway LOS in 2045. The plan places emphasis on providing a safe environment for automobiles while offering guidance on more balance roadway designs to serve both non-motorized (i.e. bicycles and pedestrians) and motorized travel. The intent of the Plan is to assist the City in developing more multi-modal future capital improvement plans for those roads under the City's jurisdiction, and to facilitate communicating the City's priorities when other agencies are advancing projects on their roads within the City's system. It also proposes potential funding opportunities and identifies development processes for prioritized projects to pursue successful implementation.

1. Roadways

Adopted Level of Service (LOS) standards for roadway facilities are contained in Policies 2.2.1, 2.2.2 and 2.2.3 of the Transportation Element of the City's Comprehensive Plan. Local roadways have an adopted LOS standard of "D" except where specialized transit service exists, the LOS threshold is increased to "D + 120%". State roadways have an adopted LOS standard of "E". The LOS analysis contained in this CIE update is based on 2023 traffic counts from the 2024 City's TMP.

This section of the report addresses the performance of Doral's roadway system. Roadway vehicular counts were undertaken at various locations within the City. Using this data, LOS were calculated for each associated roadway segment on an Annual Average Daily Traffic (AADT), Peak Hour, Peak Directional and Peak Hour Bi-directional basis. The future conditions analysis for the Doral TMP was conducted to evaluate the projected performance of key intersections and corridors by 2045. The methodology involved multiple steps, including traffic forecasting, level of service (LOS) evaluation, and mitigation strategies for failing intersections.

For the future traffic analysis, the future peak hour traffic volumes were derived using the Southeast Florida Regional Planning Model (SERPM) activity-based model from 2015 to 2045 using a Weighted Average Compound Annual Growth Factor of 1.2682. To accurately project future traffic conditions, the analysis incorporated data on upcoming developments within the City of Doral, including new residential, commercial, and industrial projects expected to generate additional traffic. Regional growth projections for population and employment were also used to estimate future travel demand.

The study area intersections are listed in Table 2.

TABLE 2: STUDY AREA INTERSECTIONS

TMC	INTERSECTION
1	NW 107th Avenue at NW 12th Street
2	NW 97th Avenue at NW 12th Street (E/W)
3	NW 12th Street at NW 87th Avenue
4	NW 12th Street at NW 82nd Avenue
5	NW 25th Street at NW 117th Avenue
6	NW 25th Street at NW 107th Avenue
7	NW 25th Street at NW 97th Avenue
8	NW 25th Street at NW 82nd Avenue
9	NW 25th Street at NW 79th Avenue
10	NW 107th Avenue at NW 33rd Street
11	NW 97th Avenue at NW 33rd Street
12	NW 33rd Street at NW 87th Avenue
13	NW 41st Street at NW 115th Avenue
14	NW 41st Street at NW 114th Avenue
15	NW 41st Street at NW 107th Avenue
16	NW 41st Street at NW 102nd Avenue
17	NW 36th Street at NW 87th Avenue
18	NW 36th Street at NW 82nd Avenue
19	NW 36th Street at NW 79th Avenue
20	NW 58th Street at NW 114th Avenue
21	NW 58th Street at NW 107th Avenue
22	NW 58th Street at NW 97th Avenue
23	NW 58th Street at NW 87th Avenue
24	NW 74th Street at NW 114th Avenue
25	NW 74th Street at NW 107th Avenue
26	NW 74th Street at NW 97th Avenue
27	NW 25th Street at NW 87th Avenue
28	NW 41st Street at NW 97th Avenue
29	NW 58th Street at NW 79th Avenue
30	NW 58th Street at NW 102nd Avenue
31	NW 74th Street at NW 102nd Avenue

The intersection operations were evaluated in terms of the Level of Service (LOS) which is a common measure of the quality of performance at an intersection and is defined in terms of vehicular delay. LOS is expressed on a scale of A through F, where LOS A represents the least delay (i.e., less than 10 seconds per vehicle) and LOS F represents the highest delay (i.e., greater than 80 seconds per vehicle for a signalized intersection). This serves as a handbook to detail the condition of each facility in the City. Categories of data include:

- Specific Link
- Number of Lanes
- Existence of a Median
- Road Jurisdiction
- Functional Classification
- Number of Traffic Signals
- Segment Length
- Signals per Mile
- Speed Limit
- Roadway Class
- Existing Level of Service Standard
- Service Volume at LOS C, D, E
- Average Annual Daily Traffic (AADT)
- Peak Hour Volume
- Remaining Capacity
- Transit Service
- Sidewalks
- Bike Lanes

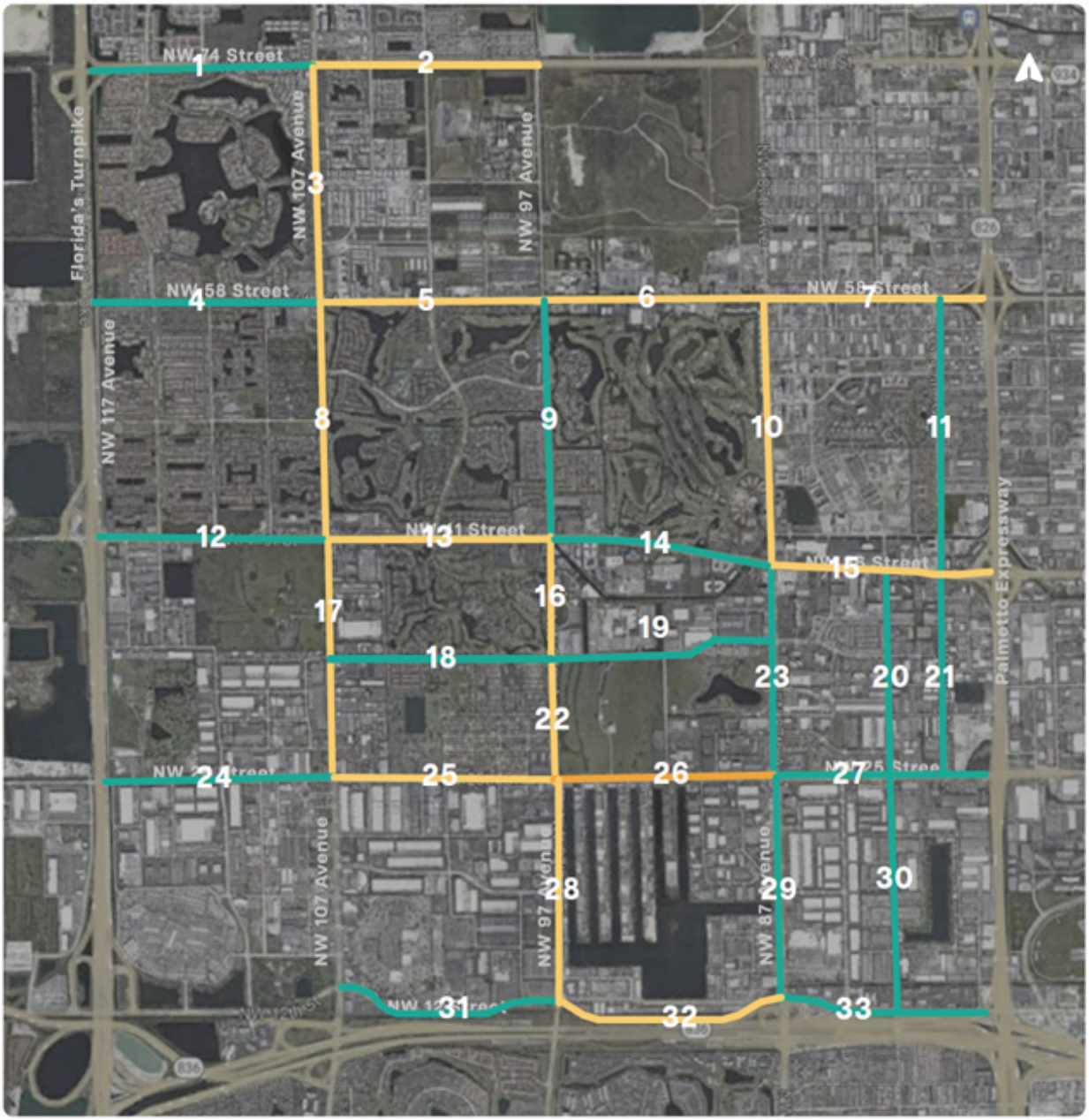
Figure 1 shows the Level-of-Service (LOS) on the primary Doral roads in 2023. These segments show a LOS D or Better.

Figure 2 presents the projected Level-of-Service on the City's primary road system in 2045. Roadways with average daily traffic flows exhibiting LOS "F" in 2025 are projected to be:

1. NW 25th Street from NW 97th Avenue to NW 87th Avenue

The potential mitigation solutions to these documented and projected future traffic conditions is to increase the miles of sidewalks and bike lanes, increase trolley service and make modifications to routes as needed, and roadway and intersection improvements. These mitigation strategies are documented in the preparation of the FY 2025-2029 Schedule of Capital Improvements presented later in this report in Table 8.

FIGURE 1: 2023 OVERALL CORRIDOR LEVEL OF SERVICE (LOS)



LEGEND

- LOS C or Better
- LOS D
- LOS E
- LOS F

Corridor LOS was derived by comparing AADT volumes with capacities provided in FDOT 2023 Multi-modal Quality/Level of Service Handbook.

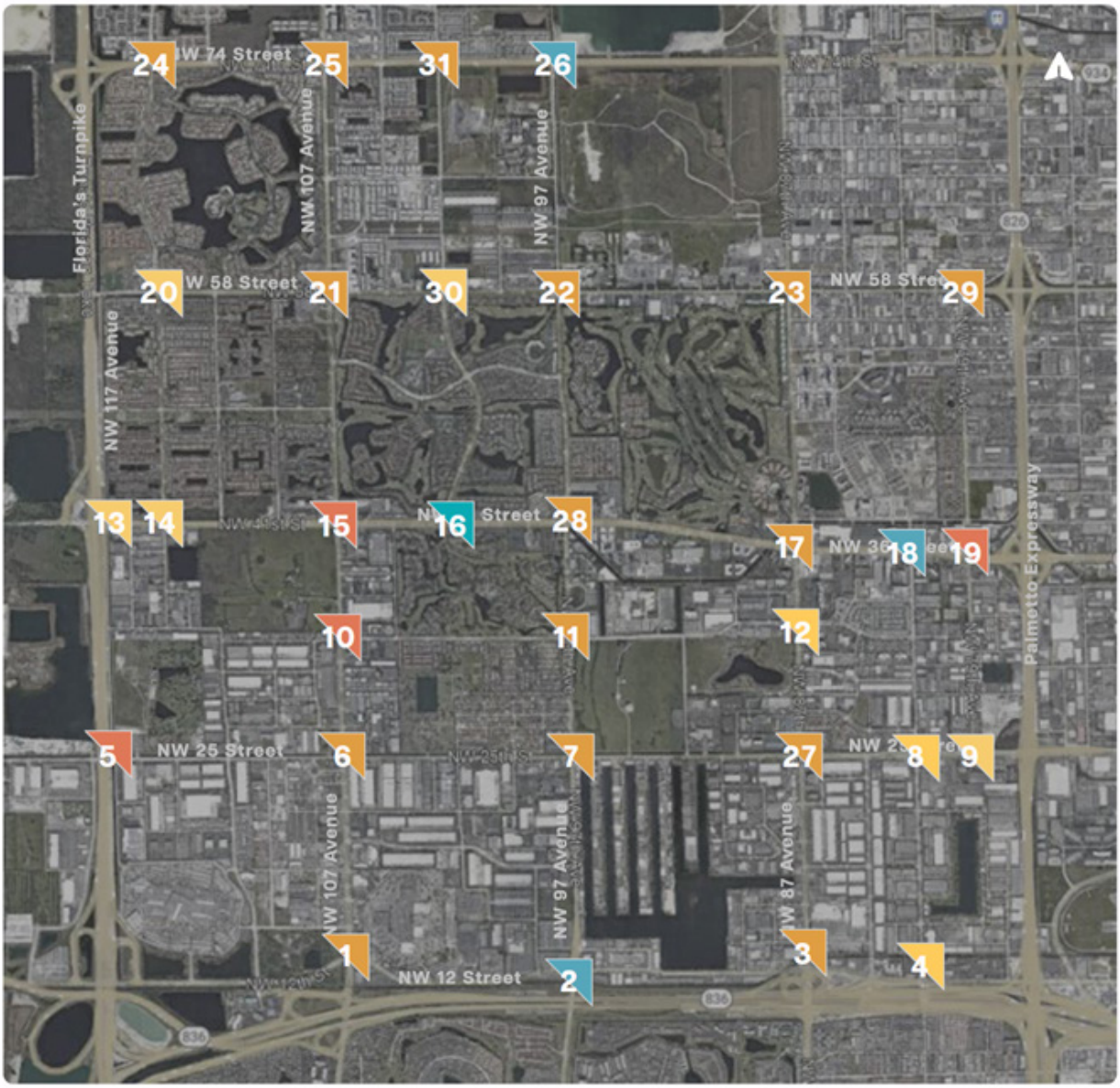
2. Intersections

The City's Transportation Master Plan (2024) included a total of 31 signalized intersections. The traffic volumes collected in the field were checked for accuracy. Pedestrian volumes were also input and analyzed in the Synchro software. For signalized intersections, the existing signal timings were obtained from Miami-Dade County. Synchro 11 was used to evaluate the 2023 conditions for morning peak (7:45 AM – 8:45 AM) and evening peak (5:00 PM – 6:00 PM) period for the 31 intersections. Intersection geometry was coded using the latest satellite images of Google earth, which included number of lanes, turning movements, storage lanes, storage lane length, and right turn channelization, etc. Peak hour volume, %HV, and PHF were added to volume settings from the traffic data collected. Speed limits of each corridor were obtained from Miami-Dade County's Open Data Hub as well as existing signal timings and signal operating plans. Tables 3 and 4 show the 2023 summary of results for AM and PM peaks, respectively.

TABLE 3: 2023 AM PEAK RESULTS SUMMARY

Intersection No.	Overall		Worst Movement		Number of Movements with		
	Delay	LOS	Movement	Delay	LOS	LOS E	LOS F
1	61.3	E	SBL	150.8	F	0	6
2	23.9	C	NBT	71.8	E	1	0
3	65.4	E	SBL	158.3	F	2	5
4	52.8	D	NBT	83.8	F	2	1
5	127.1	F	SBT	237.2	F	0	6
6	62.5	E	NBL	119.7	F	2	4
7	70.2	E	SBL	103.8	F	1	3
8	38.6	D	WBL	85.4	F	5	1
9	35.4	D	SBL	71.9	E	4	0
10	224.1	F	WBL	302.4	F	0	6
11	57.9	E	EBT	69.6	E	3	0
12	49.3	D	NBL	108.8	F	4	1
13	45.0	D	NBL	107.8	F	2	3
14	53.8	D	SBL	112.9	F	1	5
15	92.2	F	WBL	192.4	F	2	6
16	34.6	C	SBL	81.1	F	0	1
17	72.0	E	SBL	124.5	F	4	4
18	31.6	C	SBT	101.1	F	3	3
19	95.0	F	SBL	160.5	F	2	7
20	41.3	D	SBT	62.6	E	1	0
21	55.6	E	WBR	147.1	F	3	1
22	79.8	E	NBT	132.8	F	3	3
23	60.7	E	NBL	94.8	F	5	1
24	72.0	E	SBT	135.2	F	0	3
25	76.1	E	WBR	262.6	F	4	4
26	21.5	C	NBR	245.4	F	1	4
27	58.4	E	NBL	121.6	F	2	3
28	71.1	E	WBL	136.1	F	1	6
29	70.3	E	NBT	146.1	F	3	4
30	51.9	D	NBT	86.6	F	4	1
31	70.0	E	NBT	149.0	F	1	3

FIGURE 3: 2023 AM PEAK HOUR LEVEL OF SERVICE



LEGEND

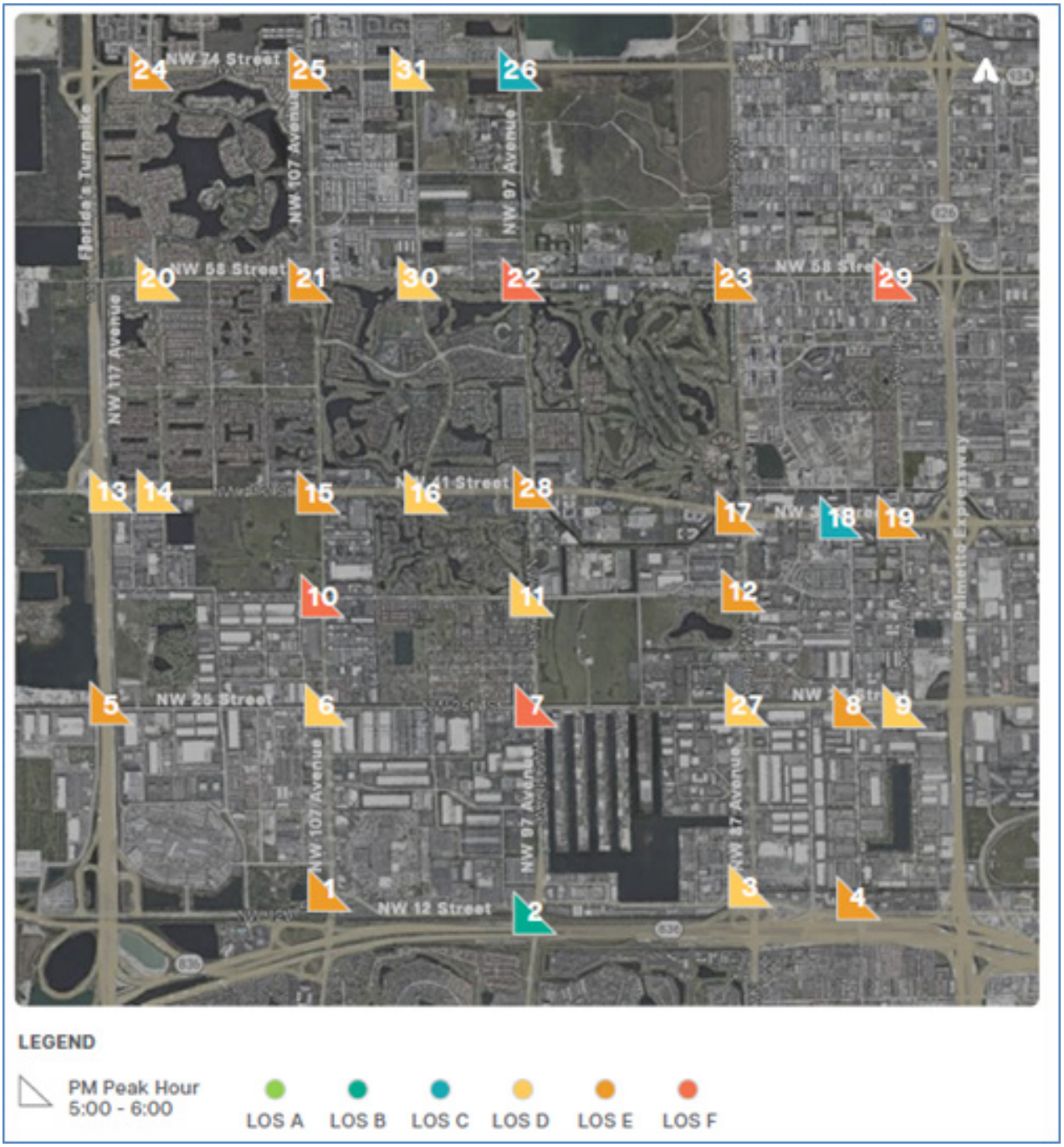
AM Peak Hour
7:45 - 8:45

LOS A | LOS B | LOS C | LOS D | LOS E | LOS F

TABLE 4: 2023 PM PEAK RESULTS SUMMARY

Intersection No.	Overall		Worst Movement		Number of Movements with		
	Delay	LOS	Movement	Delay	LOS	LOS E	LOS F
1	62.0	E	NBL	98.4	F	0	4
2	16.3	B	SBT	55.6	E	1	0
3	50.0	D	NBL	88.1	F	4	2
4	60.9	E	SBR	111.9	F	4	2
5	71.1	E	NBT	129.2	F	0	3
6	43.5	D	NBL	118.0	F	1	2
7	86.0	F	NBT	111.7	F	0	6
8	58.5	E	EBL	88.0	F	3	4
9	53.5	D	EBL	95.7	F	4	2
10	138.2	F	NBT	173.8	F	3	3
11	49.3	D	WBT	59.7	E	2	0
12	62.8	E	WBT	72.5	E	4	0
13	36.9	D	NBL	88.6	F	1	3
14	48.7	D	EBL	119.4	F	3	3
15	63.7	E	SBL	114.3	F	2	4
16	38.4	D	SBR	121.5	F	1	4
17	71.8	E	SBL	104.1	F	6	2
18	31.9	C	SBT	88.7	F	5	1
19	61.2	E	EBL	142.4	F	2	5
20	37.1	D	SBT	45.3	D	0	0
21	62.1	E	SBT	85.4	F	6	1
22	100.0	F	SBT	133.7	F	0	5
23	58.0	E	NBL	77.3	E	4	0
24	66.7	E	NBL	114.2	F	1	5
25	61.3	E	WBL	94.1	F	6	3
26	31.2	C	SBT	88.8	F	1	2
27	54.7	D	NBL	130.8	F	3	4
28	61.9	E	WBL	94.0	F	3	3
29	83.9	F	EBR	871.4	F	3	4
30	48.6	D	SBT	87.7	F	5	1
31	37.0	D	NBT	67.0	E	4	0

FIGURE 4: 2023PM PEAK HOUR LEVEL OF SERVICE

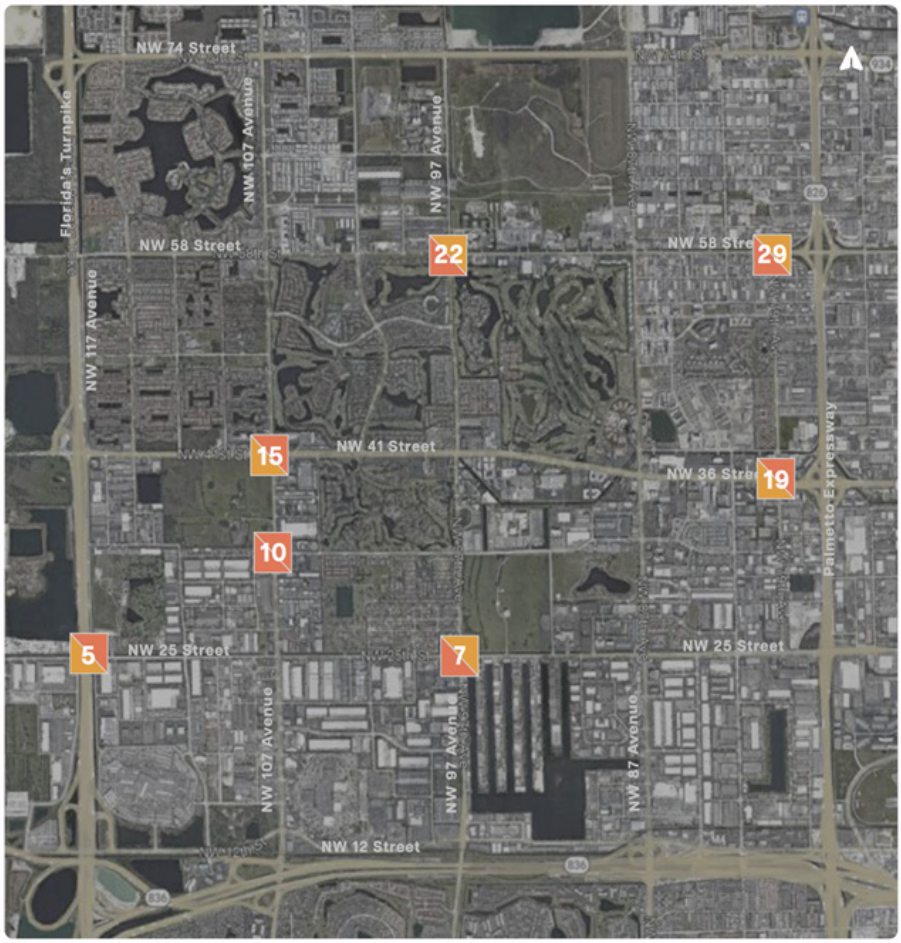


It can be seen from Tables 3 and 4 that 19 and 17 intersections out of 31 were operating at overall LOS E or F during AM and PM peak hours, respectively. Intersections 5, 7, 10, 19, 22, and 29 operate in overall LOS F in at least one or both the peak hours.

TABLE 5: FAILING INTERSECTIONS RESULTS SUMMARY

Intersection No.	AM Peak Hour					PM Peak Hour				
	Overall		Worst Movement			Overall		Worst Movement		
	Delay	LOS	Movement	Delay	LOS	Delay	LOS	Movement	Delay	LOS
5	71.1	E	NBT	129.2	F	71.1	E	NBT	129.2	F
7	86.0	F	NBT	111.7	F	86.0	F	NBT	111.7	F
10	138.2	F	NBT	173.8	F	138.2	F	NBT	173.8	F
15	63.7	E	SBL	114.3	F	63.7	E	SBL	114.3	F
19	61.2	E	EBL	142.4	F	61.2	E	EBL	142.4	F
22	100.0	F	SBT	133.7	F	100.0	F	SBT	133.7	F
29	83.9	F	EBR	871.4	F	83.9	F	EBR	871.4	F

FIGURE 5: 2023 FAILING INTERSECTIONS



The future conditions analysis for the Doral Transportation Master Plan was conducted to evaluate the projected performance of key intersections and corridors by 2045. This analysis was essential for understanding how the city's transportation network will handle future traffic demands and identifying areas where improvements are necessary to prevent congestion and improve safety. The methodology involved multiple steps, including traffic forecasting, level of service (LOS) evaluation, and mitigation strategies for failing intersections.

To accurately project future conditions, the analysis incorporated data on upcoming developments within the City of Doral, including new residential, commercial, and industrial projects expected to generate additional traffic. Regional growth projections for population and employment were also used to estimate future travel demand.

The analysis revealed that most intersections and corridors would experience significant congestion by 2045, with 17 of the 31 intersections projected to operate at LOS E or F, indicating failing conditions. These failing conditions are key bottlenecks where delays and congestion would severely impact travel times and overall network efficiency. Capacity and operational improvements are critical to ensuring the currently failing intersections and soon-to-be failing intersections are remedied.

FIGURE 6: OVERALL FUTURE 2045 PROJECTED INTERSECTION LEVEL OF SERVICE (LOS)

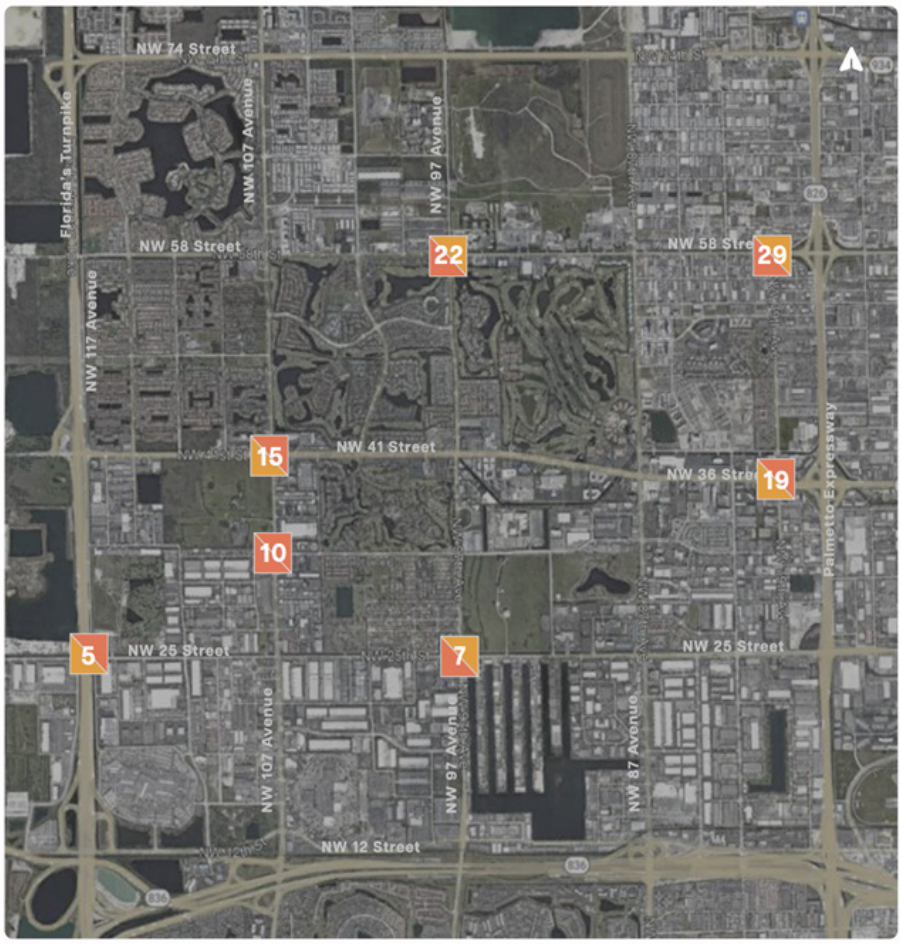
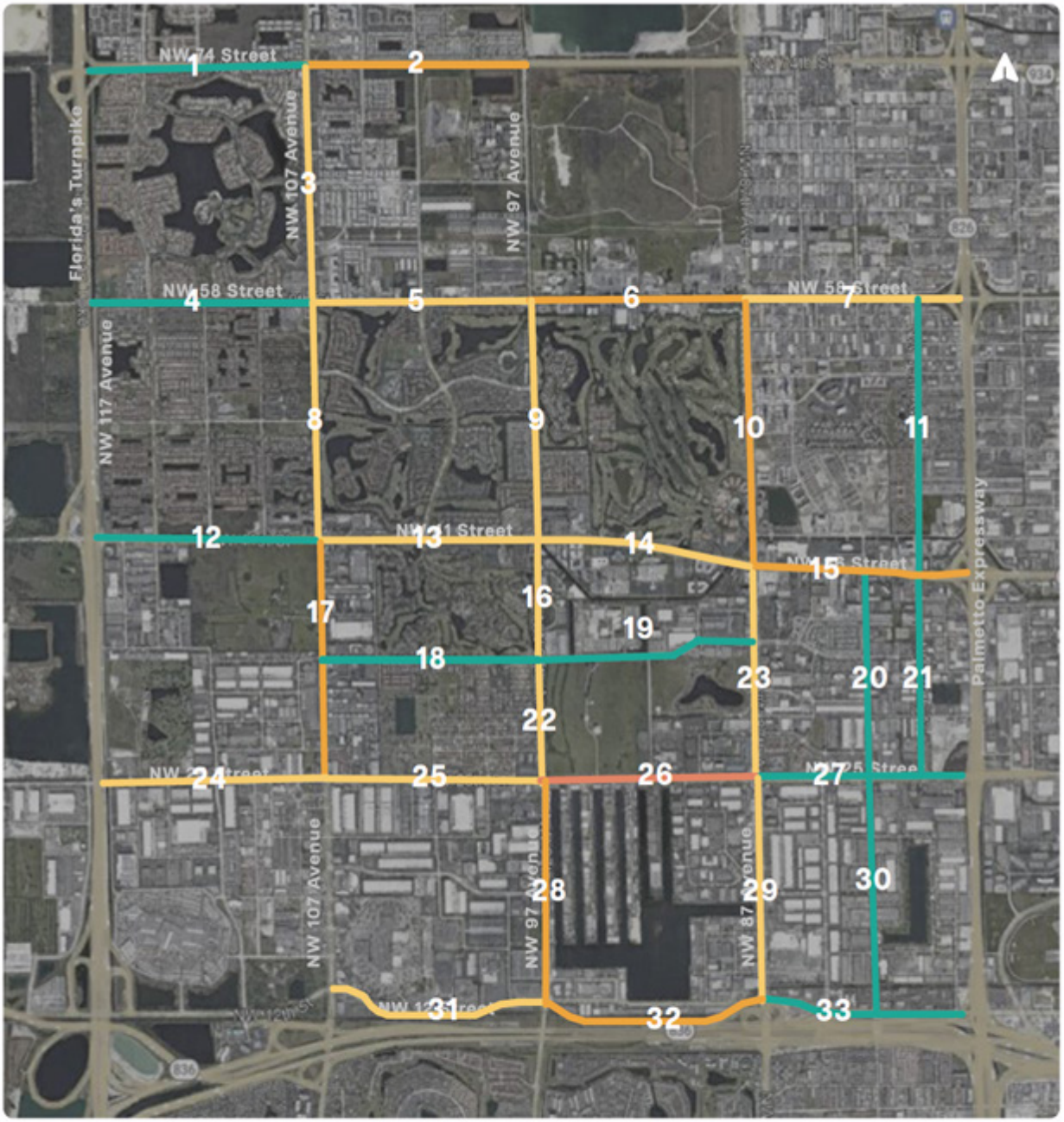


FIGURE 7: FUTURE 2045 OVERALL CORRIDOR LEVEL OF SERVICE



LEGEND

- LOS C or Better
- LOS D
- LOS E
- LOS F

Corridor LOS was derived by comparing AADT volumes with capacities provided in FDOT 2023 Multi-modal Quality/Level of Service Handbook.

As part of the existing configuration of the intersection analysis, mitigation strategies were developed to support recommendations for improvements, See Table 6. Some mitigation strategies include following:

- Signal timing optimization (incuding cycle lenghts).
- Lane assignment adjustments – adjustments are applied to lane assignments to optimize signal performance in the future year. There are no physical changes to the roadway limits, and curbs are expected in this option.
- Identifying additional lanes that can be provided within available right-of-way (ROW) without acquiring new land.
- Lane assignments and signal timing and phasing optimization to suit improvements.

TABLE 6: RECOMMENDED CAPACITY/OPERATIONS PROJECTS

Roadway/ Facility Name	Project Limits		Jurisdiction	Project Description
	From	To		
NW 33 St	NW 107 Ave		City/County	Reconfiguration of lane assignment for the westbound approach of the intersection to Left, Thru, and Right through re-striping. Optimization of signal phasing.
NW 33 St	NW 107 Ave		City/County	Widening of the intersection to provide the following lane configuration: *Westbound approach = L, L, T, R* *Southbound approach = L, T, T, R, with 100 ft storage length for right turn* *Northbound approach = L, T, T, R, with 100 ft storage length for right turn* *Optimization of signal phasing and adjustment of cycle length.*
NW 117 Ave	NW 25 St		City/County	Widening of the southbound and northbound approaches of NW 117 Ave at the intersection to provide the following lane configuration: *Northbound approach = L, T+R Southbound approach = L, T+R* *Optimization of signal phasing and adjustment of cycle length and splits.*
NW 79 Ave	NW 36 St		City/County	Widening of the northbound approach of NW 79 Ave and the westbound approach of NW 36 St at the intersection to provide exclusive right turn lanes. The following lane configuration: *Northbound approach = L, T+R, R* *Westbound approach = L, L, T, T, T+R, R* *Optimization of signal phasing and adjustment of cycle length and splits.*
NW 79 Ave	NW 58 St		City/County	Widening of the eastbound approach to provide an additional through lane and widening on the east of the intersection to provide a receiving through lane and another receiving lane (acceleration lane) for the exclusive right turn lane from the northbound approach. The following configuration: *Eastbound approach = L, T, T, T, R Northbound Approach = L, T, R* *Addition of a channelization island between the northbound approach thru lane and right turn lane.* *Optimization of signal phasing and adjustment of cycle length and splits.*

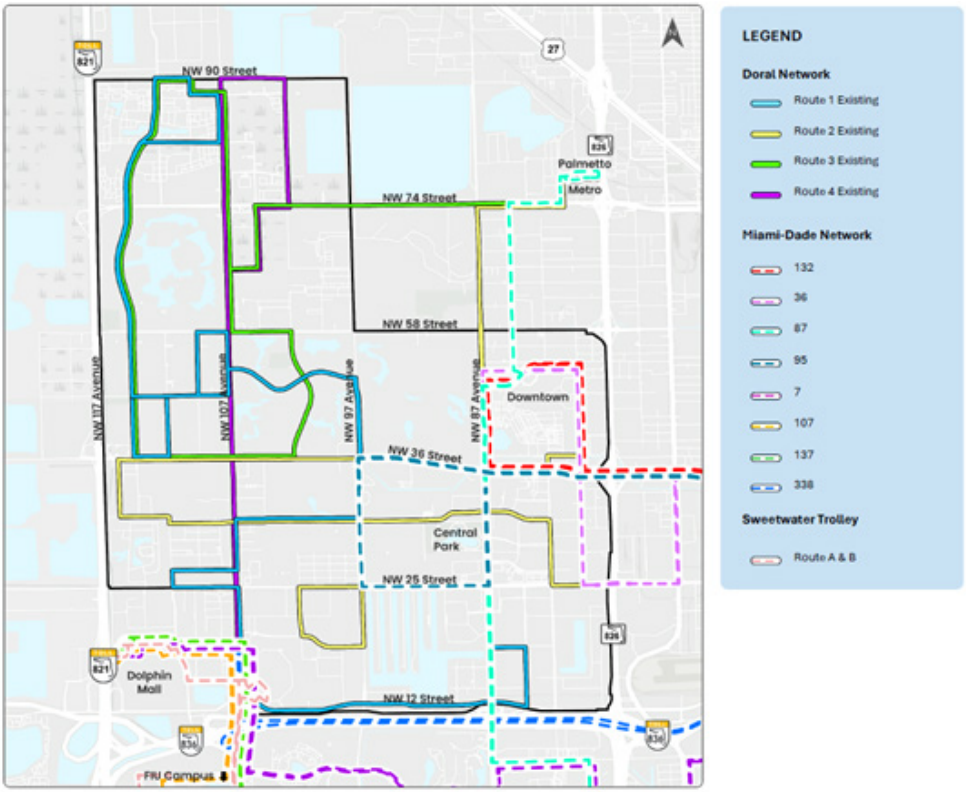
3 Transit

The City of Doral is served by four (4) Miami-Dade Transit (MDT) routes 36, 87, 95, and 132 and four (4) Doral Trolley routes. Figure 8, shows the combined routes of Miami-Dade Transit and the City of Doral Trollies within the City's boundary.

The free-fare Doral Trolley System launched on February 1, 2008. It is a local circulator which serves the city through four (4) routes (R1, R2, R3 and R4), with route R1 providing connector service to MDT Metrobus routes at Miami International Mall and routes R2 and R3 providing connector service to the Miami-Dade Transit Metrorail via the Palmetto Metrorail Station in Medley. Route R4 commenced in August 2018 and provides service to Florida International University (FIU) along NW 107th Avenue. While these routes are intended to serve separate areas of the city, there is significant overlap between them. Because there are no dedicated trolley lanes, trolleys operate on the same roadways used by individual vehicles. The city conducts regular trolley ridership surveys to provide insight into future changes to route alignment, stops, hours of operation and frequency. Route 1 has the highest ridership, followed by Routes 3, 2 and 4, respectively.

Factors that affect both the level of ridership and the quality of trips include access to and amenities at trolley stops. Trolley stops accessibility includes connectivity by sidewalks connecting to stops and improvements would include meeting all ADA requirements, convenient stop locations, shelters, shade, signage, schedules, and easy boarding curb heights. Key urban centers with large jobs, housing, and/ or retail activity centers within the City should be joined by transit routes, as well as primary locations/ transit connections located outside the City Limits.

FIGURE 8: FUTURE 2045 OVERALL CORRIDOR LEVEL OF SERVICE



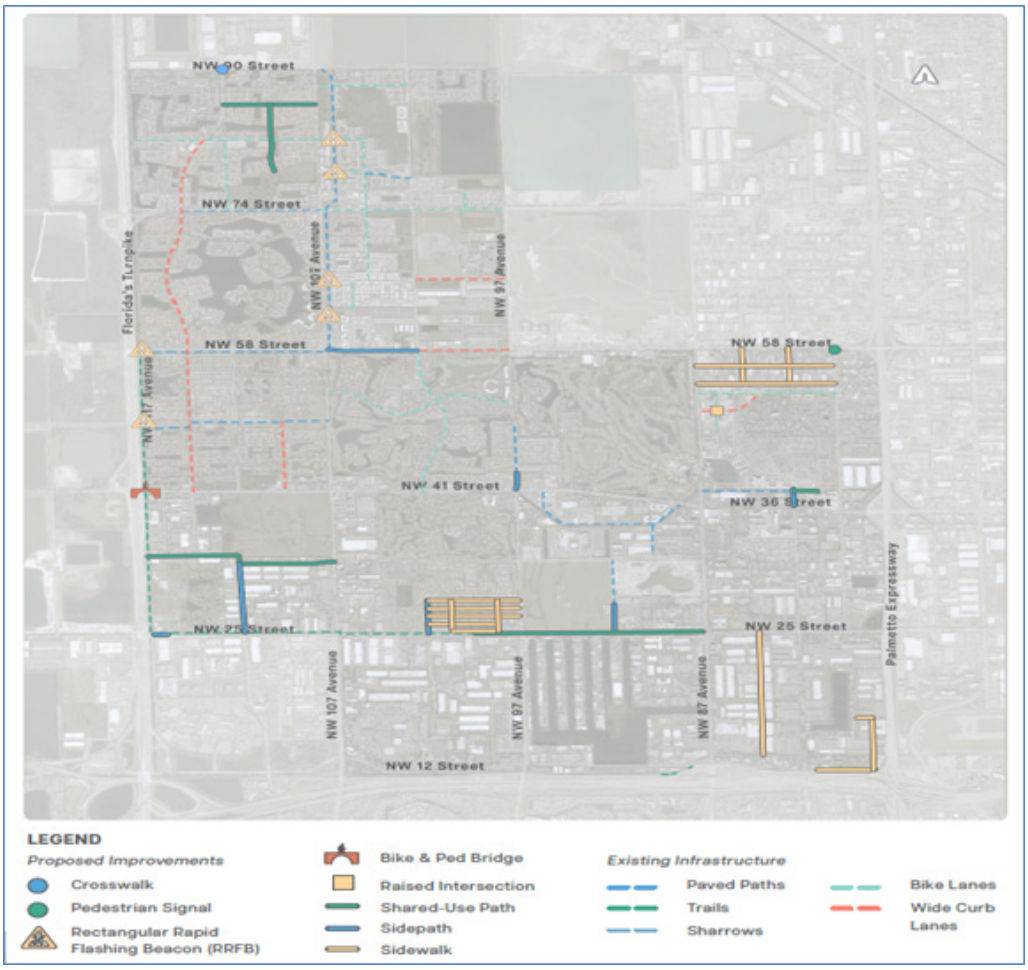
Source: City of Doral Public Works Dept. July, 2024.

Currently, the City is updating the Doral Transit Study to identify modifications for the Doral Trolley existing service to adjust for the changes that occurred in the Better Bus Network Transition, as well as outline additional recommendations to enhance the existing Doral Trolley network to better service residents and visitors of Doral.

4 Bicycle/Pedestrian Facilities

The City's goal is to encourage intra-city trips by bicycle and walking. The majority of the City of Doral is interconnected by sidewalks, and the city has dedicated annual funding to continue to connect missing segments. The City has also developed a Bikeway Network Master Plan that contains a series of interconnected bike lanes and multi-use paths that will be implemented by both public and private entities. Figure 9 shows Existing and Proposed Bicyclist/Pedestrian Improvements. The existing bike network consists of 17.78 miles of bike lanes, 9.95 miles of off-road shared-use paths, and 0.51 miles of maintenance path for a total of 28.24 miles of current bike facilities.

FIGURE 9: DORAL'S PROPOSED BICYCLIST/PEDESTRIAN IMPROVEMENTS AND EXISTING INFRASTRUCTURE



Source: City of Doral Public Works Dept. July, 2025.

5 De Minimus Impact Report

Pursuant to State Statute Section 163.3180(6), local governments must submit a De Minimis Impact Report with the annual Capital Improvements Element update of the City's Comprehensive Plan. A De Minimis Impact is defined as: an impact that would not affect more than 1 percent of the maximum volume at adopted LOS of the affected transportation facility; no impact is a de minimis if the sum of the existing roadway volumes and the projected volumes from approved projects on each transportation facility would exceed 110 percent of the maximum volume at the adopted LOS and provided that an impact of a single-family home on an existing lot will constitute a de minimus impact on any roadway regardless of the level of deficiency of the roadway. Based on the above definition of de minimis impact and current city traffic data, the City of Doral does not need to file a De Minimis Impact Report.

6. 5-Year Level-of-Service Transportation Projects

To address the LOS deficiencies now and expected by 2028-29, the City has programmed 23 roadway, intersection and multi-modal capacity improvement projects within the current 5-year planning period. These projects are listed in Table 7 below and will be funded primarily through the City's Transportation Fund.

TABLE 7: CITY TRANSPORTATION PROJECTS FY 2025-2029

Project Location	Type of Work	Implementation Timeframe (Fiscal Year)
1. Citywide (Milling & Resurfacing / Re-Striping)	Roadway Maintenance	2023-2027
2. Landmark Community Complete Streets	Traffic Calming Improvements	2025-2026 Construction phase ongoing
3. Section 7	Traffic Calming Improvements	2025-2026 Construction phase ongoing
4. NW 90 Street (Vacant Land Section 7)	Roadway Widening	2026
5. NW 104 Avenue (69 St. – 70 St)	Roadway Widening	2026
6. NW 102 Avenue (76 St- 86 St)	Roadway Widening	2026
7. Citywide (Bus shelters)	Transit Mobility & Infrastructure	2025-26 Construction ongoing
8. NW 114 Avenue (34 St- 39 St)	Roadway Improvements	2027
9. NW 34 Street (117 Ave- 112 Ave)	Roadway Improvements	2025-2026
10. NW 117 Avenue (NW 25 St- NW 34 St)	Roadway Improvements	2025- Design phase ongoing
11. Intersection Improvements- Citywide	Roadway Improvements	2023-2027
12. Do Not Block Box Intersections	Roadway Improvements	2025-2027
13. FPL Undergrounding	Roadway Improvements	2026
14. NW 33 Street (NW 79- 82 Avenue) Reconstruct	Roadway Improvements	2025

Project Location	Type of Work	Implementation Timeframe (Fiscal Year)
15. Improvements Identified in the 2023 Transportation Master Plan Update	Roadway Improvements	2027
16. Doral Art District (Adaptive Re-Use)	Complete Streets Improvements	2026-2028
17. NW 50th Street and NW 112th Ave	New traffic Signal	2025-Design ongoing
18. NW 117th Ave and NW 34th Street	New traffic Signal	2025-Design ongoing
19. NW 117th Ave and NW 50th Street	Crosswalk relocation	2025-Design ongoing
20. NW 92nd Ave and NW 33rd Street	New Traffic Signal	2025-2026-Construction phase
21. NW 36th and Palmetto	Doral Entry feature-New monuments	2025-2026 Construction ongoing
22. NW 104th Ave from NW 34th to NW 41st Street	New sidewalk design	2025-2026 Design ongoing
23. NW 82nd Ave from NW 36th Street to NW 41st Street.	New sidewalk design	2025-2026 Design ongoing

Source: Doral Public Works Department (July 2025)

In addition to the City-funded transportation projects listed above, a number of capacity improvement projects in the City have been identified in the current Miami-Dade County Transportation Planning Organization (TPO) 5-year Transportation Improvement Program (TIP) and the 2050 Long Range Transportation Plan (LRTP). The TIP is a staged multi-year program similar to the CIE at the regional scale and coordinates all cities, Miami-Dade County departments, State of Florida, Turnpike Enterprise, and Expressway Authority required for all federally- funded transportation projects and prioritizes Priority Transportation Projects (PTP) funded over the next 5-year planning period. The planned projects within or affecting the City of Doral are shown in Table 8.

TABLE 8: CITY TRANSPORTATION PROJECTS FY 2025-2029

FACILITY	LIMITS	TYPE OF WORK	RESPONSIBLE AGENCY	CONSTRUCTION TIME FRAME	TOTAL COST FY 2025–2029 (Millions)
MIA Cargo Viaduct	NW 82 Ave to Ronald Reagan Turnpike	Widening of NW 25 Street and construction of a viaduct	Aviation		$393.30
NW 25 Street	NW 25 St to NW 34 Street	Reconstruction and add turn lanes	MDC		$3.89
NW 117 Avenue	NW 117 Avenue to NW 87 Avenue	Widen from 4 to 6 lanes	MDC		$138.84
NW 25 Street	NW 87 Avenue to NW 57 Avenue	Widen from 4 to 6 lanes	MDC		$17.99
NW 107 Avenue	NW 12 Street to NW 14 Street	Bicycle/Pedestrian Safety	MDC		$0.05

FACILITY	LIMITS	TYPE OF WORK	RESPONSIBLE AGENCY	CONSTRUCTION TIME FRAME	TOTAL COST FY 2025–2029 (Millions)
NW 34 Street	NW 114 Avenue to approx. 720 ft East	Retrofit ROW for transit mobility improvements	MDC		$0.31
NW 29 Street	NW 109 Avenue to NW 112 Avenue	Retrofit ROW for transit mobility improvements	MDC		$0.10
NW 27 Street	NW 109 Avenue to NW 112 Avenue	Retrofit ROW for transit mobility improvements	MDC		$0.12
NW 114 Avenue	NW 34 Street to NW 39 Street	Retrofit ROW for transit mobility improvements	MDC		$0.28
NW 27 Street	NW 87 Avenue to NW 87 Court	Retrofit ROW for transit mobility improvements	MDC		$0.04
NW 21 Street	NW 107 Avenue to NW 102 Avenue	Retrofit ROW for transit mobility improvements	MDC		$0.39
NW 12 Street	SR 836/Dolphin Park Ride to NW 114 Avenue	Widening and resurfacing for Bus Only Lanes	MDC		$5.53
NW 74 Street	Palmetto Metrorail Station to Florida's Turnpike	Potential Future Rapid Transit Corridor	MDC		$2.50
NW 58 Street	NW 97 Avenue to SR 826	Road Reconstruction	MDC	Under Construction	PYF*
NW 34 Avenue	NW 58 Street to NW 74 Street	Widen from 2 to 4 Lanes	MDC	Under Construction	PYF*
NW 87 Ave	NW 58 Street to NW 74 Street	Resurfacing	MDC		PYF*
NW 97 Avenue	NW 52 Street to NW 58 Street	Widen from 2 to 4 Lanes	MDC	Under Design	PYF*
NW 97 Avenue	NW 58 Street to NW 70 Street	Widen from 2 to 4 Lanes	MDC		PYF*
NW 58 Street	NW 117 Avenue and NW 107 Avenue	Resurfacing	MDC		PYF*
NW 58 Street	NW 74 Ave and NW 72 Ave	Resurfacing	MDC		PYF*
NW 58 Street	SR 836/NW 107 Ave and SR 826/ Palmetto Exp	Congestion Management	MDC/FDOT		PYF*

FACILITY	LIMITS	TYPE OF WORK	RESPONSIBLE AGENCY	CONSTRUCTION TIME FRAME	TOTAL COST FY 2025–2029 (Millions)
NW 12 St	NW 97 Ave and NW 93 Ct	Intersection Improvement	MDC	Under Construction	PYF*
NW 25 Street	NW 97 Ave and NW 87 Ave	Widen from 4 to 6 Lanes	MDC	Under Design	PYF*
NW 25 Street	NW 107 Ave and NW 87 Ave	Resurfacing	MDC		
NW 12 St	NW 107 Ave and NW 87 Ave	Resurfacing	MDC		PYF*
NW 107 Avenue	NW 12 St and NW 25 St	Resurfacing	MDC		PYF*
NW 107 Avenue and NW 27 Street		Intersection Improvement	MDC	Construction Completed	PYF*
NW 12 St and SR 973/NW 87 Ave		Intersection Improvement	MDC		PYF*
NW 98 Court and NW 12 Street		Traffic Signal	MDC	Under Construction	PYF*
NW 98 Court and NW 17 Street		Traffic Signal	MDC	Under Construction	PYF*
NW 107 Avenue and NW 14 Street		Traffic Signal	MDC	Under Construction	PYF*
NW 107 Avenue and NW 50 Street		Traffic Signal	MDC	Under Design	PYF*
NW 41 St and NW 97 Ave		Congestion Management	MDC/FDOT		PYF*

**PYF: Prior Year Funding*

Source: Miami-Dade County TPO 2025 TIP, (2025-29) Approved June 27, 2024, and 2050 LRTP Approved September 2024.

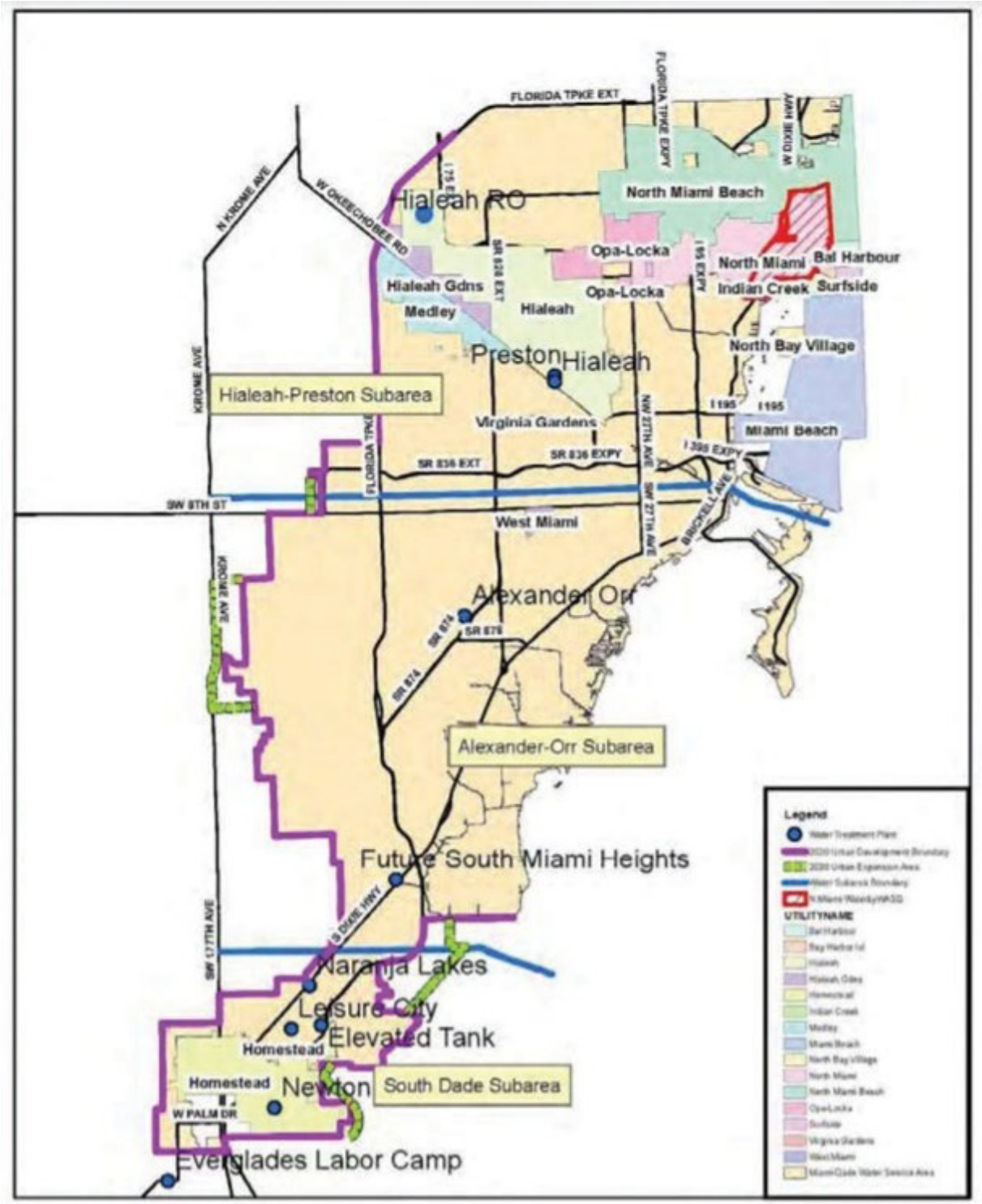
Additional roadway improvement projects currently not programmed in the FY 2025-2029 TIP plan may be added in future CIE and TIP updates as funding becomes available at the Federal, State and local levels of government. The City is proactively addressing local roadway deficiencies occurring primarily on its roadways and works closely with County and State agencies to address future LOS requirements on their roadways through FY 2028-29 and beyond.

B. Potable Water Service

The residents of the City of Doral obtain their potable water and sewer service directly from WASD, which is responsible for ensuring enough capacity to meet the water needs of existing and future water customers. In addition to serving the City, WASD is the designated regional supplier of potable water for most of the cities in Miami-Dade County. In that capacity, the WASD supplies the City of Doral's residential and non-residential property owners with potable water on a retail basis and bills these customers for this service.

WASD owns, operates, and maintains a central potable water distribution system, along with the facilities for collection and treatment of water, which then transmits the potable water to its citizens throughout most of Miami-Dade County. See Figure 5 below.

FIGURE 5: EXISTING WASD WATER TREATMENT PLANTS



Source: City of Doral Water Supply Plan 2021

TABLE 6: CITY OF DORAL WATER USAGE PROJECTIONS

Table 3.4 – Retail Water Use Forecast in the City of Doral, 2020 to 2040			
Year	Population Forecast (a)	2018 Per Capita (gallons per person per day) (b)	Annual Average Daily Water Demand, mgd
(1)	(2)	(3)	(4) = (2) x (3) / 1,000,000
2020	75,522	126.94	9.59
2025	96,606	126.94	12.26
2030	104,072	126.94	13.21
2035	112,115	126.94	14.23
2040	120,779	126.94	15.33

(a) From City of Doral, 2020.
(b) City of Doral water demand in Gross Gallons Per Person Per Day is from Miami-Dade County as reflected in the Draft Miami Dade Water and Sewer Department 10-Year Water Supply Facilities Work Plan, October 2020.

Regional water system capacity projections have been developed based on current water system capacity, planned WASD capacity projects, and current and projected demand from retail water customers within the County. These studies show that the County will have sufficient capacity through 2040. There are no private potable water facilities in the City of Doral.

Wellfield Protection Measures: WASD's wellfields and their corresponding Cones of Influence are in or near the City. These wellfields consist of 45 individual wells and have a total designed installed capacity of approximately 295 mgd. Of these wells, 23 provide raw water to the Hialeah Water Treatment Plant while the remaining 22 wells service the J.E. Preston Water Treatment Plant. To protect the quality of the groundwater in the area, the City of Doral has adopted the Miami-Dade County Wellfield.

Protection Program, which restricts the types of land uses allowed within the area of the wellfield cones of influence. The following are some of the restrictions associated with the Wellfield Protection Program:

- Only uses that do not generate hazardous waste are allowed within the Cone of Influence.
- All permitted land uses within the Cone of Influence shall be required to connect to the WASD central sewer collection system.
- Developments within the Cone of Influence shall be required to meet the minimum requirements for percentages of pervious area.
- Land uses within the Cone of Influence shall be restricted to those uses that do not create water pollution.

Water Conservation Measures: Miami-Dade County Water Conservation Plans and Ordinances. The City of Doral, located in Miami-Dade County, is subject to the following County plans and ordinances:

Miami-Dade Water Use Efficiency Plan: The Miami-Dade WASD's 20-year Water Use Efficiency Goal-Based Plan (Efficiency Plan) was approved by the SFWMD in May 2007. Included in the Efficiency Plan is the Water Conservation Best Management Practices (BMP) Implementation Schedule, Costs, and Savings Projections through the year 2026. WASD is implementing the BMPs included in the 2019 Annual Report for the Water Conservation Plan to improve the management of traditional water supplies, encourage development of alternative water supplies and improve water use efficiency. Several initiatives were adopted by WASD to encourage efficient use of water by residential and non-residential users. Some initiatives included plumbing

retrofits, landscape irrigation evaluations, and residential and commercial water use evaluations and rebates. To ensure future water savings, the Water Use Efficiency Standards for new residential and commercial developments enacted by the Miami-Dade Board of County Commissioners on January 1, 2009 are being implemented through local building codes. The standards include technical amendments to the Building Code to require maximum water conservation flow rates for plumbing fixtures. Because of these efforts, as of December 31, 2019, the County saw an 18.6 mgd reduction in finished water demand from the year prior to the implementation of the Efficiency Plan in 2006 (from 341.62 mgd to 323.04 mgd).

Miami-Dade County Water Conservation Plans and Development Codes: The County adopted a Water Conservation Plan that was added 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 identifies BMPs for the service area. (Doral's Comprehensive Plan – Policies: 1.5.3, 5A.3, 5A.3.2) Since January 1, 2009, the county's building code, specifically Section 8-31 and 32-84, requires the installation of water efficient fixtures and high efficiency appliances. In 2007, Section 3.0 Provision of Water Supply City of Doral, Florida 12 Water Supply Facilities Work Plan Update - 2021 the County developed a water conservation program that provides rebates to residents that install high efficiency faucets, toilets and showerheads in properties constructed prior to 1996. It also includes rebates for water efficient upgrades to irrigation systems in single family and large properties throughout the County.

Miami-Dade County Permanent Landscape Irrigation Restriction: Lawn and landscape irrigation throughout the county has been limited to two days per week year-round as required by Section 32-8.2 of the Miami-Dade County Code of Ordinances. Irrigation is not permitted between the hours of 10:00 a.m. and 4:00 p.m.

Miami-Dade County Landscape Standards: Development within the county must comply with landscape standards in Sections 18-A and 18-B of the County Code which encourages Florida Friendly Landscaping to reduce outdoor water use.

Miami-Dade County Multi-Family Sub-Metering: The County Code was also modified to authorize the use of submetering in multifamily residential developments, requiring a meter be installed in each individual dwelling unit for water billing purposes instead of being billed using a single master meter. Use of submeters enhances water use monitoring and encourages water conservation.

Water Conservation Based Rate Structure: Miami-Dade County has adopted a water conservation-based rate structure for its retail water customers. 3.3.2 City of Doral Ordinances and Codes Promoting Water Conservation The City has adopted the following ordinances and codes to promote water conservation by the City's residents. Because the City does not have access to customer water use data, the City is unable to develop estimates of the amount of water conserved.

Access to customer water use data, the City is unable to develop estimates of the amount of water conserved.

Use of Florida-Friendly Landscape Principles: The City of Doral Comprehensive Plan and Land Development Code recommends use of Florida-Friendly landscape materials and the minimum percent of required pervious area that must follow the principles of Florida Friendly Landscape provisions as set forth in the South Florida Water Management District's Xeriscape Plant Guide II. (Doral's Comprehensive Plan - Objective: 5A.5. Policies 1.4.2, 1.4.3, 5A.3.2, 6.1.6) Requirement of

High Efficiency Plumbing Fixtures in New Construction: The City of Doral has adopted the Florida Building Code (FBC) which contains plumbing flow restriction requirements. The County Code prohibits the cities within its jurisdiction from enacting standards less stringent from the FBC. The City of Doral Building and Inspection Services also includes, in their procedures, provisions for new construction to have water conservation control devices installed per the Florida Plumbing Code, as a condition for granting certificates of occupancy. (Doral's Comprehensive Plan – Policy 6.1.6)

Rain Sensor Overrides for New Lawn Sprinkler Systems: The City of Doral has adopted the FBC, which requires the

installation of rain sensors on new irrigation systems. Section 3.0 Provision of Water Supply City of Doral, Florida 13 Water Supply Facilities Work Plan Update - 2021 Additionally, the City of Doral abides by all County's landscape Code requirements, including the use of rain sensors on automatic lawn sprinklers systems. (Doral's Comprehensive Plan – Policy 1.5.4) City of Doral Adoption of the SFWMD's Water Shortage Restrictions: In 2007, the City of Doral adopted Ordinance No. 2007-13 entitled "Water Restrictions" to protect the water resources of the City from harmful effects of over-utilization during periods of water shortage and to assist the SFWMD as it implements its water shortage plan. The provisions are found in Chapter 47 – Division 2. – Water Restrictions of the City of Doral Code of Ordinances. This ordinance applies to all persons using the City's water resources that are subject to the "water shortage" or "water shortage emergency" as determined by the SFWMD, whether from a publicly- or privately- owned water utility system, private wells, or private connections with surface water bodies. The use of treated effluent or saltwater is excluded from the requirements of this ordinance. The ordinance references the South Florida Water Management District's Water Shortage Plan as provided in Chapter 40E-21, Florida Administrative Code.

Enforcement: The City enforces these ordinances through its code compliance department.

1. 5-Year Level-of-Service Water Projects

Section 163.3177(4)(a), Florida Statutes, requires coordination of the local comprehensive plan with the water management district's regional water supply plan. Doral receives all potable water service from Miami-Dade County Water and Sewer Department's (WASD) Hialeah/Preston Water Treatment Plant (WTP). The supply capacity of the Hialeah-Preston Subarea wellfields is 343.43 million gallons per day. The plant is owned and operated by WASD, who is responsible for maintaining the distribution and treatment facilities serving the City of Doral. The City of Doral's Water Supply Plan and Infrastructure Element Policy 5A.1.1 of the City's Comprehensive Plan establishes the adopted Level of Service (LOS) standard for potable water at 127 gallons per capita per day (GPD). According to the State guidelines, the Water Supply Plan and the Comprehensive Plan must address the development of traditional and alternative water supplies, service delivery, conservation, and reuse programs necessary to serve existing and new developments for at least a 10-year planning period. As the city implements its Green Master Plan and Miami-Dade County water restrictions on landscape watering to 2x/week, the City should be able to reduce its water demand (GPD) moving forward. (The city should aim to reduce its average GPD over time to be closer to the State and National averages.)

C. Sanitary Sewer Facilities

The adopted Level of Service (LOS) standard for sanitary sewer in Doral is 100 gallons per capita per day, as noted in Policy 5B.1.1 of the Infrastructure Element of the Comprehensive Plan. Sanitary sewer service in the City is provided by Miami-Dade County's Water and Sewer Department (WASD). The LOS standard for wastewater in the County requires all regional water treatment plants to operate with a physical capacity of no less than the annual average daily sewage flow. The Hialeah Water Treatment Plant is located at 700 West 2nd Avenue, Hialeah, Florida. This facility has a maximum installed design capacity of million gallons per day.

1. 5-Year Level-of-Service Wastewater Projects

No capacity-related projects for the County's wastewater system have been identified within the City of Doral or WASD for the 5-year CIE planning period 2025-2030.

D. Stormwater Management

The City of Doral falls within the boundaries of the C-4 Tamiami Canal and C-6 Miami River Canal watershed basins managed by the South Florida Water Management District (SFWMD). Within the City of Doral there are three (3) sub basin secondary canals which convey surface stormwater from the city: the Northline Canal, located along the north side of NW 25th Street, the C-2 Extension Canal, located along NW 117th Avenue, and the Dressels Canal which crosses the City from NW 117th Avenue to the Palmetto Expressway. Figure 6 depicts the canal system in Doral.

Doral adopts the following system-wide drainage Level of Service (LOS) standards for new development and redevelopment in Comprehensive Plan Policy 5C.1.1 of the Infrastructure Element:

- Water Quality Standard. Stormwater facilities shall meet the design and performance standards established in Chapter 62-25, Rule 25.025, Chapter 40-E, Chapter 40E-40, Florida Administration Code (FAC), and Section 24-48, of the Code, with the retention of the first inch of runoff onsite to meet the water quality standards required by Chapter 62-302, Rule 862-302.500, FAC, and Section 24-42 of the Code.

- Water Quantity Standard. Where two or more standards impact a specific development, the most restrictive standard shall apply:

  - Post-development runoff shall not exceed the pre-development runoff rate for a 25- year storm event, up to and including an event with 24-hour duration.

  - Treatment of the runoff from the 5-year storm event, 24-hour duration, in accordance with Section D-4, Part 2, Miami-Dade County Public Works Manual and Sec. 24-48.3 (7) and Rule 40E-40.302, FAC, "Basis of Review, Volume IV Manual."

  - Treatment of the runoff from the first one inch of rainfall onsite or the first 0.5 inch of runoff from impervious areas, whichever is greater.

- Flooding Standard. During the 10-year return design storm event, flooding of minor arterials should be below the crown of the roadway.

The City requires all new developments to provide adequate on-site drainage prior to the issuance of a Building permit to maintain LOS standard for drainage. However, there were a number of pre-existing deficient drainage conditions when the City was incorporated in 2003. In 2006, Doral adopted its first Stormwater Master Plan. Since then, the City has updated the plan on several occasions, including the latest update in 2021, which forms the basis for the Stormwater 5-Year SCI.

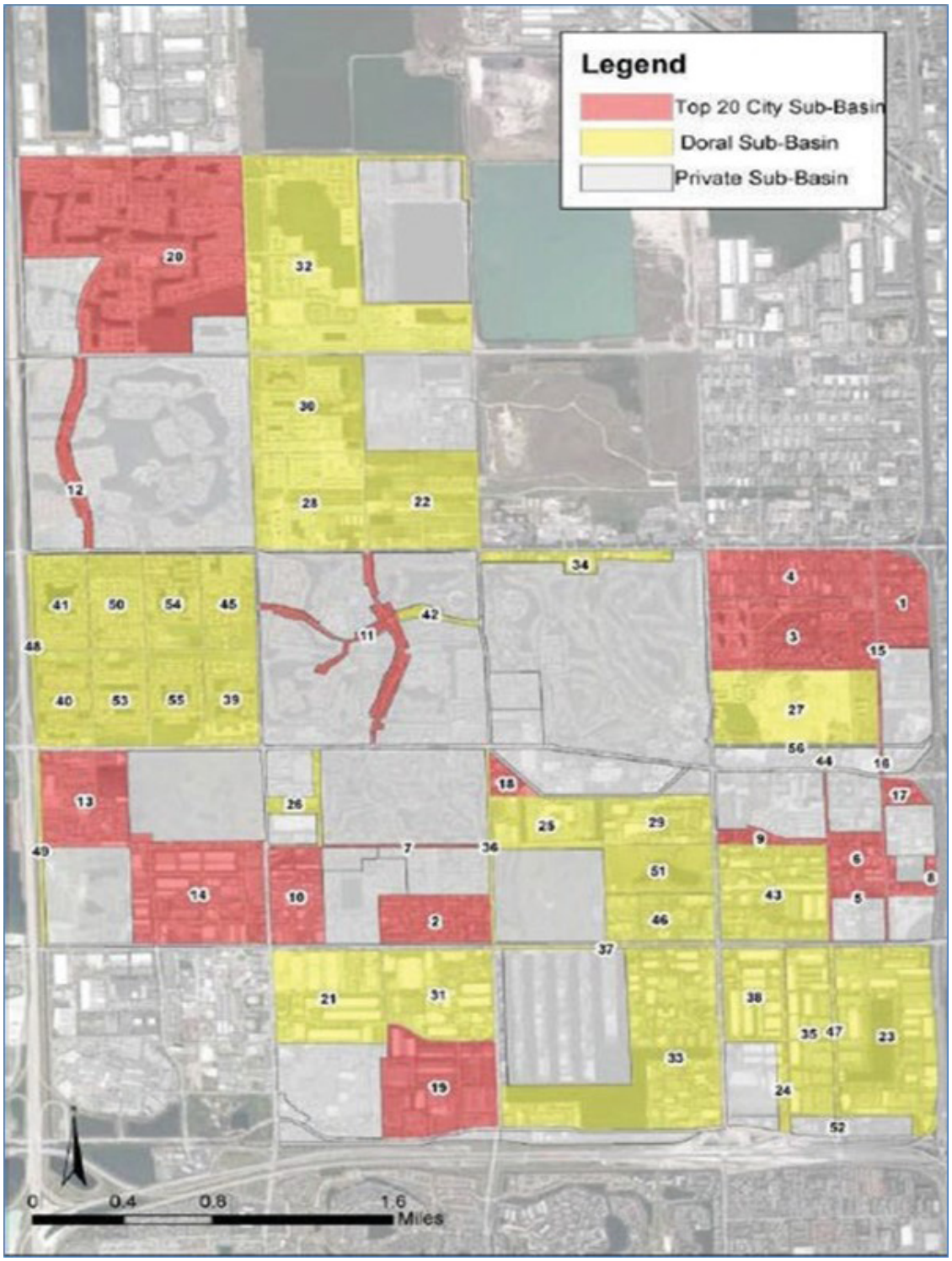
The City's Stormwater Master Plan (SWMP) serves as a planning-level engineering document that analyzes the current condition of storm water management systems across the city. The plan identifies high priority flood prone areas, and establishes a five-year capital improvement plan for implementation. The analysis performed for this SWMP takes into consideration the primary components of the existing storm water management system (manholes, inlets, and major conveyance pipes), canals and lakes, topography, land uses, as well as, groundwater elevations, and historical rainfall when analyzing the primary existing drainage infrastructure throughout the City. These elements are all combined and analyzed within a mathematical Hydraulic and Hydrologic model that simulates the performance of the City's primary drainage systems using design rainfall events. The City's secondary drainage storm water management systems, such as individual inlets, manholes, and minor conveyance systems which control drainage within the sub-basin, are not analyzed as a part of this SWMP. The secondary drainage systems are typically analyzed in the construction design phase and through redevelopment projects.

The City's drainage system deficiencies are identified through a series of sub-basins which are color coded for priority ranking purposes and depicted in Figure 7. This system allows the City to identify and prioritize the most cost-effective storm water management projects for inclusion in the 5-Year SCI and City Capital Improvement Program. The main intent of the contents of this SWMP is to serve as a guide for the City in order to identify problem areas, develop potential future projects, and correlating those future projects with a planning-level cost.

FIGURE 6: DORAL CANAL SYSTEM

Source: City of Doral Public Works 2025

FIGURE 7: PRIORITIZED DRAINAGE SUB BASINS



Source: City of Doral Public Works 2025

1. 5-Year Level-of-Service Stormwater Projects

The City of Doral has established a dedicated Stormwater Fund to support the continued maintenance and improvement of its stormwater management infrastructure. This fund is essential to addressing drainage needs, reducing localized flooding, and meeting state and federal regulatory standards.

In 2025, several stormwater improvement projects are in the design phase. These include the **Stormwater Improvement Project in Sub-Basin F-1 No PS (Vanderbilt Area)**, which spans from NW 97th Avenue to NW 102nd Avenue and from NW 25th Terrace to NW 28th Street. Also in design are projects in **Sub-Basin D-1-1**, covering NW 29th Street from NW 77th Court to NW 79th Avenue, and **Basin H-79-Ave – N**, located along NW 79th Avenue from NW 41st Street to NW 58th Street. These projects are intended to address known drainage concerns and improve system performance in flood-prone areas.

Several additional projects are scheduled to move into the construction phase in 2025. Among them is **Sub-Basin D-3-1**, which includes NW 29th Street from NW 82nd Avenue to NW 79th Avenue, and NW 79th Avenue from NW 25th Street to NW 29th Street. Construction is also planned for **Sub-Basins F-5, NW 114th Avenue, and D-2-1**, all of which are part of Year 4 of the Capital Improvement Plan identified in the City's 2021 Stormwater Master Plan update. Year 4 received grant funding which will not allow construction commencement until summer of 2026 when all grant documentation is expected to be completed. These projects will expand stormwater capacity and improve resilience in targeted areas.

Looking ahead, the City plans to initiate the design phase for additional stormwater improvements in 2026. These future projects will further support the City's efforts to improve its FEMA Community Rating System (CRS) classification, which helps reduce flood insurance premiums for residents and contributes to a safer, more sustainable community.

The citywide general stormwater improvements and maintenance is also funded through the stormwater fund and includes catch basin maintenance, regular street sweeping, canal maintenance, and floating debris removal. The city will continue to implement the updated Stormwater Master Plan and the proposed flood reduction projects in addition to implementing, when possible, non-canal BMP's.

These include integrating the green infrastructure and Low Impact Development methodologies outlined and codified in the city's Green Master Plan and Low Impact Development Master Plan. Table 7 below shows the projects and costs for specific planned stormwater improvements during the 5-year CIE period. The total cost of the 5-year program is estimated to be $6,550,000.

TABLE 7: CITY STORMWATER PROJECTS AND ESTIMATED COSTS FY 2025-2030

Project Location	FY2025/26 (in $$s)	FY2026/27 (in $$s)	FY2027/28 (in $$s)	FY2028/29 (in $$s)	FY2029/30 (in $$s)
City-Funded Projects					
Stormwater Master Plan Improvements (Various Locations)	1,000,000	1,000,000	1,000,000	1,000,000	1,000,000
NW 78th Av (12th St – 15th St)	----	----	400,000	----	----
88th Av (13th Terr – 15th St)	----	----	----	450,000	----
115th Av (34th Ave- Doral Blvd)	----	----	----	----	700,000
TOTALS	**1,000,000**	**1,000,000**	**1,400,000**	**1,450,000**	**1,700,000**

Source: City of Doral Public Works Department. July 2025.

A. Solid Waste

The City's adopted Level of Service (LOS) standard for solid waste is 9.4 pounds per capita per day (Comprehensive Plan, Infrastructure Element Policy 5D.1.2). Table 8 below shows the projected solid waste which could be generated in the City through 2030 based on population projections. The city's Green Master Plan does stress the need to reduce the amount of solid waste being sent to the landfill and increasing the capture rate of recyclable materials. Increasing the recycling rate would reduce the total pounds per capita per day.

TABLE 8: SOLID WASTE GENERATION 2020-2030

YEAR	POPULATION	LOS (lbs./capita/day)	SOLID WASTE GENERATED (tons/day)
2020	75,874	9.4	357
2025	86,615	9.4	407
2030	99,083	9.4	466

Source: City of Doral Planning & Zoning Department (2025)

The City has an interlocal agreement with Miami-Dade County Solid Waste Management for County collection, recycling and disposal of residential solid waste generated within Doral. Private businesses, industries, warehouses, and medical facilities utilize private waste management services that are not included in this analysis. According to the County's Comprehensive Development Master Plan, there will be sufficient landfill capacity to serve future development county-wide through 2030. Miami-Dade County operates two (2) landfills: (1) North Dade Landfill (Class III landfill receives yard trash, construction and demolition debris, waste tires, asbestos, carpet, cardboard, paper, glass, plastic, non-appliance furniture, and cannot accept putrescible) located in the northern portion of the County; and (2) South Dade Landfill (Class I landfill receives general, non-hazardous, commercial, industrial, and agriculture wastes) located in the southern portion of the County. Covanta Resource Recovery Facility (RRF) is a recycling and waste to energy facility located in Doral. As of the date of this report, the RRF was closed due to a fire that severely damaged several buildings in the facility.

Miami-Dade County enters into interlocal agreements with each municipality and services unincorporated areas for waste disposal and recycling services throughout the county. The County has prepared a Solid Waste Master Plan which identifies new activities, programs, facilities and technologies to provide sustainable solid waste services to ensure public health and environmental protection. The County's Waste Management Master Plan identifies potential new technologies, operational efficiency, recycling, waste to energy and other methods to meet Miami-Dade County's projected long-term needs.

Using the City's projected annual solid waste generation for the years 2025-26 through 2029-2030, the City will average approximately 158,428 tons per year annually through the 5-year period.

1. 5-Year Level-of-Service Solid Waste Projects

The County's solid waste LOS will be maintained with the operation of the county-wide solid waste management system. The City should integrate, implement, and monitor waste vs recycling rates within Doral and consistent with the City's Green Master Plan objectives and goals. No capacity-related projects for the County's wastewater system have been identified within the City of Doral or WASD for the 5-year CIE planning period 2025-2030.

B. Parks and Recreation

The Level of Service (LOS) standard for Doral's parks system is contained in Parks and Recreation Element Policy 7.1.1 which was amended in 2018 as follows:

2012–2014: 3.75 acres of developed park land per 1,000 population
2015–2020: 2.25 acres of developed public park land per 1,000 population
2021–future: 3.00 acres of developed public park land per 1,000 population

The Doral's Parks System is shown in Figure 8. The City currently has 168.08 ~~169~~ acres of developed parks. The Parks System LOS standard is increased in 2021 from 2.25 to 3.00 acres per 1000 population per the City's Comprehensive Plan. ~~The annual projected park acreage needed through 2030 is presented in Table 9 below:~~

~~TABLE 9: PROJECTED PARKS LEVEL-OF-SERVICE ACREAGE NEEDS~~

~~YEAR~~	~~PROJECTED POPULATION~~	~~PARK LOS NEED (Acres)~~	~~PARK (ACRES)~~	~~DEFICIT~~
~~2022~~	~~81,182~~	~~244~~	~~163~~	~~-81~~
~~2023~~	~~82,408~~	~~247~~	~~166~~	~~-81~~
~~2024~~	~~83,636~~	~~251~~	~~166~~	~~-85~~
~~2025~~	~~86,615~~	~~260~~	~~169~~	~~-91~~
~~2026~~	~~89,042~~	~~267~~	~~169~~	~~-98~~
~~2027~~	~~91,544~~	~~275~~	~~169~~	~~-106~~
~~2028~~	~~94,123~~	~~282~~	~~169~~	~~-113~~
~~2029~~	~~96,780~~	~~290~~	~~169~~	~~-121~~
~~2030~~	~~99,083~~	~~297~~	~~169~~	~~-128~~

~~*The City will be adding 133 acres of new private parks with approved developments that is not calculated. Source: City of Doral staff (2025)~~

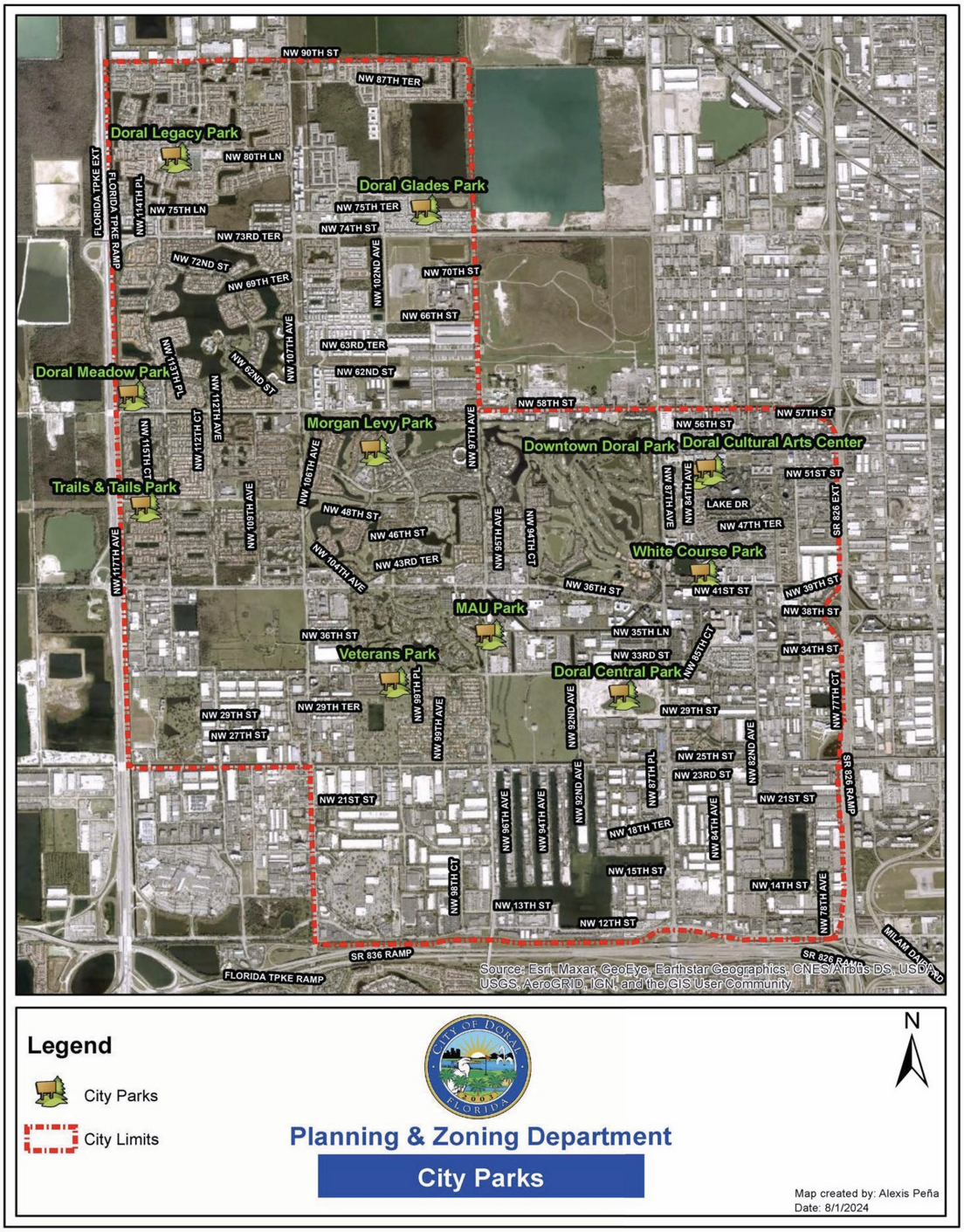
5-Year Level-of-Service Projects

The planned park developments in FY 2025-2030 are shown in Table 10. Some of the projects are improvements to existing parks, however, most represent new parkland acreage and thus will serve to increase the City's future Parks LOS as follows:

Planned Park	Acres	Projected Completion
PW- Flight way Retention Passive Park	3	2026
Linear Greenway Park	29.5	2030 ~~TBD~~
TOTAL NEW PARK AREAS = 32.5 ACRES		

The City is projecting a surplus ~~deficiency~~ in meeting its adopted park Level of Service (LOS) during the 5-year planning period of this CIE (2025-2030). ~~To meet the LOS standard by 2030, which requires a total of 297 acres of public park land, the City will need to acquire an additional 128 acres of new park space.~~

FIGURE 8: DORAL'S PARK SYSTEM (2024)



Source: City of Doral Parks and Recreation 2024

TABLE 10: PLANNED PARKS PROJECTS FY 2024-2029

PROJECT	LOCATION	ESTIMATED COMPLETION	SIZE (in acres)
City:			
PW – Flightway Retention Passive Park	NW 102nd Av. & NW 62nd St.	Q1 2026	3
Doral Central Park	NW 87th Ave. & 30th St.	Q1 2025	78*
Linear Greenway Park	NW 50th St. & NW 107th Av.	TBD~~Q3 2027~~	29.5
Total Public Parks Added			**32.5**
Private:			
~~Environmental Passive Park~~	~~NW 107 Ave. and NW 74 St.~~	~~Concurrent withdevelopment – Q3 2026~~	~~51~~
Grand Bay Preservation Park	NW 87th St./NW 86th St. (eastof NW 107th Ave.)	Concurrent withdevelopment – Q3 2026	72
Total Private Parks Added			**72 ~~133~~**

Source: Doral Parks Department, 2026~~2025~~.

A detailed description of each proposed park improvement is provided below:

1. Doral Central Park – is a 78-acre park is the largest in Doral and home to major events such as EGGstravaganza and the Independence Day Celebration. Its open green spaces and scenic lake views are ideal for corporate gatherings and community events. Central Park is located in the community heart of Doral adjacent to the headquarters of Carnival Cruise Lines and the United States Southern Command. As part of the voter approved Parks Bond Referendum, this park will be redeveloped to include amenities such as a 80,000 square foot indoor recreation center, aquatic facility with competition and teaching pools, amphitheater, basketball and tennis courts, playgrounds, skate park and pump track and multi-purpose green spaces.

2. Retention Passive Park - This proposed park site is located on 102nd Avenue and theoretical NW 62nd Street. The site will be used as a retention area for the Police/Public Works Building and adjacent Flightway project with 3 acres of the 5-acre city parcel dedicated as a passive park site. This park will include a stormwater retention area, walking trails, parking lot, landscaping and environmental observation being built by a private developer on public land and will be turned over to the city after construction.

3. Linear Greenway Park – Areas under FP&L transmission lines adjacent to streets are being used as multi-purpose trails as proposed in the City's Bicycle Master Plan and Parks and Recreation Element ~~Policy 6.2.6~~. Facilities and features include: multi-purpose trail/service access route with trailhead, naturalistic planted areas/native habitat plantings and public art. The linear park system comprises 41 acres.

~~4. Environmental Passive Park – This proposed private park site is (51 acres) located at NW 107th Avenue & 74th Street and contains wetlands. The site has been identified in the Parks System Master Plan as a future "Environmentally Protected Park." Low impact observation walkways on the perimeter of the wetlands and educational kiosks are planned.~~

4~~5.~~ Preservation Park – This proposed private park site (72 acres) is currently a highly-impacted wetland located

between two residential developments. This natural resource would be restored transforming the site into a unique passive recreation amenity for the residents of Doral. The City's goal is to make this preservation park a public access point; coordination with Miami-Dade County and the SFWMD will be required in the process.

2. Long-Term Planning

Since 2021, the parks LOS standard is 3.00 acres per 1,000 population per city council resolution. Figure 10 shows a net deficit of park land as the population of the city continues to increase unless new developments supply additional parks or the city adds additional park land. ~~Unless new park lands are identified and improved over the next five (5) years, the City will have a park LOS deficiency of -128 acres by 2030.~~ A portion of the Police-Training facility site is being considered as an alternative for additional parkland. Additional acreage may be added by providing park land under high voltage power lines and in future annexation areas.

C. Education Facilities

Public school facility planning for Doral is provided by Miami-Dade County Public Schools (MDCPS). Every year, MDCPS is required to update and submit a Five-Year District Facilities Work Plan to demonstrate available and projected student capacity, and related information on project funding for capacity-related projects. The information below summarizes the current and projected level of service (LOS) for public schools serving Doral from the current MDCPS Five-Year District Facilities Work Plan.

The City has seven (7) public schools located within its boundary. Table 11 provides the 2025 capacity and enrollment for these public schools. It shows that all 5 of the K-8 public schools in Doral are currently operating below permanent capacity. Ronald Reagan / Doral Senior High School is operating at 71% of capacity and J. C. Bermudez Senior High School is operating at 97% of capacity. It is also relevant to note Miami-Dade College operates the School for Advanced Studies at its campus in west Doral. There are a total of 6,940 students enrolled in the public schools located in Doral.

3. 5-Year Capacity Projects in Doral

Miami-Dade County Schools has four (4) school projects planned over the next five (5) years in the Doral area as listed below.

1. J. C. Bermudez Doral SHS – The upgrading of the athletic fields was completed in November2022. The subsequent phases include the phased construction of a new gymnasium, PE support spaces, and a 616-student station classroom addition. This project is in the final the design phase. Construction will start in late fall or early winter. This project is expected to be completed by the summer of 2026.

2. Andrea Castillo Preparatory Academy - The middle school component (6-8 grade addition) is at the end of planning phase and will add 158 additional student stations.

PUBLIC SCHOOL	PERMANENT CAPACITY	STUDENT ENROLLMENT	% CAPACITY
Eugenia B. Thomas K-8 Center	1,421	864	61%
John I. Smith K-8 Center	1,118	820	73%
Ronald Reagan/ Doral Senior High School 9-12	1,776	1,271	72%
Dr. Toni Bilbao Preparatory Academy K-8	1,084	573	53%
Dr. Rolando Espinosa K-8 Center	1,381	595	43%
J. C. Bermudez Doral Senior High School	1,014	1,110	109%
Andrea Castillo Preparatory Academy K-5	670	420	63%

Source: Miami-Dade County Public Schools, August 2025

3. John I. Smith K-8- New building addition including 105 new student stations is expected to be completed by the summer of 2025.

4. Charter and Private Schools

Doral is also home to 13 charter schools serving a total of 10,500 students in 2025 as shown in Table 12 below. There are two private schools in the City serving 1,832 students (see Table 13).

TABLE 12: ENROLLMENT AND CAPACITY FOR CHARTER SCHOOLS IN DORAL

CHARTER SCHOOL	PERMANENT CAPACITY	STUDENT ENROLLMENT	% CAPACITY
Doral Academy K-5	1,395	1,395	100.0%
Just Arts and Management CMS			
Doral Academy North Charter Elementary	421	297	70.5%
Doral Academy Charter High School 9-12	3,943	2,053	95.8%
Doral Academy Charter Middle School 6-8		1,326	
Doral Performing Arts and Entertainment 9-12		400	
Renaissance Elementary K-5	900	510	57%
Renaissance Middle Charter School 6-8	650	450	69%
Doral International Academy of Math and Science K-8	900	478	53%
Downtown Doral Charter Elementary K-5	1,000	1,085	109%
Downtown Doral Charter Upper 6-12	1,297	1,500	116%
Bridge Prep Academy K-8	975	751	77%
AcadeMir Charter School East	600	552	92%

Source: Source: City staff, 2025

TABLE 13: ENROLLMENT AND CAPACITY FOR PRIVATE SCHOOLS IN DORAL

PRIVATE	PERMANENT CAPACITY	STUDENT ENROLLMENT	% CAPACITY
Divine Savior Academy	1,006	1,182	117%
Shelton Academy	600	650	108%

Source: Source: City staff, 2025

III. CAPITAL IMPROVEMENTS

The data and analysis contained in this report identify Level of Service (LOS) needs for key public infrastructure systems, including transportation, parks and recreation, and stormwater management. Table 14 presents projected revenues over the next five years by project type to support planned capital improvements. Table 15 provides a summary of anticipated expenditures for capital projects related to parks, stormwater/drainage, public facilities, and transportation, as outlined in the proposed Schedule of Capital Improvements (SCI) for FY 2025–2030. The detailed SCI, shown in Table 16 on page 39, is designed to support the maintenance, expansion, and enhancement of public facilities necessary to meet future demand and uphold adopted LOS standards.

TABLE 14: PROJECTED REVENUES FOR CAPACITY-RELATED PROJECTS BY FUNDING SOURCE

FUNDING SOURCES	FY 2025/26	FY 2026/27	FY 2027/28	FY 2028/29	FY 2029/30	5-YR TOTAL REVENUE
Park Impact Fee Fund	$260,000	$265,200	$270,504	$275,914	$281,432	$1,353,050
Stormwater Fund	$4,987,800	$5,087,566	$5,189,807	$5,298,093	$5,408,638	$25,971,904
Transportation Fund	$1,748,023	$1,782,983	$1,818,643	$1,855,016	$1,892,116	$9,096,781
TOTALS	**$6,995,823**	**$7,135,749**	**$7,278,954**	**$7,429,023**	**$7,582,186**	**$36,421,735**

Source: City of Doral, July 2025.

TABLE 15: PROJECTED 5-YEAR EXPENDITURES FOR CAPITAL IMPROVEMENTS BY TYPE

PROJECT TYPE	FY 2025/26	FY 2026/27	FY 2027/28	FY 2028/29	FY 2029/30	5-YR TOTAL COST
CITY-FUNDED PROJECTS						
Parks	$612,000	$388,000	$823,000	$1,628,500	$2,635,500	$6,087,000
Stormwater/ Drainage	$1,000,000	$3,000,000 ~~$1,000,000~~	$3,600,000 ~~$1,400,000~~	$3,450,000 ~~$1,450,000~~	$1,700,000	$12,750,000 ~~$6,550,000~~
Transportation	$3,400,000 ~~$1,700,000~~	$13,250,000 ~~$7,750,000~~	$14,050,000 ~~$6,450,000~~	$7,750,000 ~~$5,650,000~~	$10,350,000 ~~$7,450,000~~	$48,800,000 ~~$29,000,000~~
Facilities	$13,250,000	$45,000,000	$20,000,000	$0	$0	$78,250,000
TOTALS	**$18,262,000 ~~$16,562,000~~**	**$61,638,000 ~~$54,138,000~~**	**$38,473,000 ~~$28,673,000~~**	**$12,828,500 ~~$8,728,500~~**	**$14,685,500 ~~$11,785,500~~**	**$145,887,000 ~~$119,887,000~~**

Source: City of Doral Public Works, Parks and Recreation, and Capital Improvements Departments, March 2026~~July 2025~~.
** Does not include Parks Bond projects; includes funding from the General Fund and Park Impact fees.*

An analysis of the projected revenues and planned capital expenditure indicates that the overall City capital project expenditure will exceed revenues by an estimated $ 83,465,265 over the next five (5) years. The City is projected to accumulate $36,421,735 in revenues over the 5-year planning period to fund the capital improvements needed to maintain and improve public facility LOS and has identified a total of $145,887,000~~$119,887,000~~ in capital improvement projects over the planning period.

TABLE 16: DORAL'S SCHEDULE OF CAPITAL IMPROVEMENTS 2025-2030

PROJECT LOCATION	TYPE OF WORK	FY 2025-26	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	TOTAL COST	FUND SOURCE
TRANSPORTATION PROJECTS*								
1. Citywide (Milling & Resurfacing / Re-Striping)	Roadway Maintenance	$3,000,000 ~~$200,000~~	$3,000,000 ~~$1,500,000~~	$1,500,000 ~~$1,000,000~~	$1,500,000 ~~$1,000,000~~	$1,000,000	$10,000,000 ~~$4,700,000~~	TF, PTP, CITT
2. Citywide	Traffic Calming Improvements	$0	$0	$150,000	$0	$150,000	$300,000	TF
3. Citywide (Sidewalk Repairs)	Transit Mobility & Infrastructure	$400,000 ~~$0~~	$250,000	$100,000 ~~$0~~	$250,000	$0	$1,000,000 ~~$500,000~~	TF, DOT Comm
4. Citywide (Transportation Improvements)	Transit Mobility & Infrastructure	$0	$0	$600,000	$0	$600,000	$1,200,000	TF
5. NW 90 Street (Vacant Land Section 7)	Roadway Widening	$0	$0	$0	$1,000,000 ~~$400,000~~	$1,000,000 ~~$0~~	$2,000,000 ~~$400,000~~	TF
6. NW 104 Ave. (69- 70 St.)	Roadway Widening	$0	$500,000 ~~$0~~	$2,500,000 ~~$400,000~~	$0	$0	$3,000,000 ~~$400,000~~	TF
7. Citywide (Bus Shelters)	Transit Mobility & Infrastructure	$0	$0	$0	$500,000	$0	$500,000	TF
8. NW 114 Avenue (34 St- 39 St)	Roadway Improvements	$0	$0	$0	$0	$1,500,000	$1,500,000	SWF, TF
9. NW 34 Street (17 Ave- 112 Ave)	Roadway Improvements	$0	$1,500,000 ~~$0~~	$500,000 ~~$0~~	$1,500,000	$0	$2,000,000 ~~$1,500,000~~	SWF, TF
10. NW 117 Avenue (NW 25 St- NW 34 St)	Roadway Improvements	$0 ~~$1,500,000~~	$3,000,000	$3,000,000 ~~$0~~	$0	$0	$6,000,000 ~~$4,500,000~~	SWF, PTP
11. NW 99 Avenue, NW 102 Avenue, NW 66 Street	Roadway Improvements	$0	$3,000,000	$1,500,000 ~~$0~~	$0	$0	$4,500,000 ~~$3,000,000~~	TF, PTP
12. Intersection Improvements - Citywide	Roadway Improvements	$0	$2,000,000 ~~$0~~	$500,000 ~~$100,000~~	$0	$0 ~~$100,000~~	$2,500,000 ~~$200,000~~	TF
13. Do Not Block Box Intersections	Roadway Improvements	$0	$0	$100,000	$0	$100,000	$200,000	TF

PROJECT LOCATION	TYPE OF WORK	FY 2025-26	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	TOTAL COST	FUND SOURCE
14. FPL Underground	Roadway Improvements	$0	$0	$600,000	$0	$0	$600,000	TF
15. NW 33 Street (NW 79- 82 Ave) Reconstruct	Roadway Improvements	$0	$0	$0 ~~$1,500,000~~	$0	$0	$0 ~~$1,500,000~~	SWF, TF
16. Improvements Identified in the 2023 Transportation Master Plan Update	Roadway Improvements	$0	$0	$0	$0	$2,000,000	$2,000,000	TF, SWF, GF, PTP
17. Doral Art District (Adaptive Re-Use)	Complete Streets	$0	$0	$3,000,000 ~~$2,000,000~~	$3,000,000 ~~$2,000,000~~	$4,000,000 ~~$2,000,000~~	$10,000,000 ~~$6,000,000~~	TF, SWF, GF, PTP
Transportation Cost Subtotal		**$3,400,000 ~~$1,700,000~~**	**$13,250,000 ~~$7,750,000~~**	**$14,050,000 ~~$6,450,000~~**	**$7,750,000 ~~$5,650,000~~**	**$10,350,000 ~~$7,450,000~~**	**$48,800,000 ~~$29,000,000~~**	
CITY PARKS PROJECTS*								
1. Parks Projects	Citywide Park & Recreation	$612,000	$388,000	$823,000	$1,628,500	$2,635,500	$6,087,000	PIF; GF
2. Flightway – Public Works Retention Park	Park Construction	$0	$0	$0	$0	$0	$0	Private Funding
Parks Cost Subtotal		**$612,000**	**$388,000**	**$823,000**	**$1,628,500**	**$2,635,500**	**$6,087,000**	
CITY STORMWATER PROJECTS*								
1. Stormwater Master Plan Improvements	Stormwater Improvements	$1,000,000	$3,000,000 ~~$1,000,000~~	$3,000,000 ~~$1,000,000~~	$3,000,000 ~~$1,000,000~~	$1,000,000	$11,000,000 ~~$5,000,000~~	SWF
2. NW 78th Av (12th St – 15th St)	Stormwater Improvements	$0	$0	$600,000 ~~$400,000~~	$0	$0	$600,000 ~~$400,000~~	SWF
3. NW 88th Av (13th Ter – 15th St)	Stormwater Improvements	$0	$0	$0	$450,000	$0	$450,000	SWF
4. 115th Av (31st Ave – Doral Blvd)	Stormwater Improvements	$0	$0	$0	$0	$700,000	$700,000	SWF
Stormwater Cost Subtotal		**$1,000,000**	**$3,000,000 ~~$1,000,000~~**	**$3,600,000 ~~$1,400,000~~**	**$3,450,000 ~~$1,450,000~~**	**$1,700,000**	**$12,750,000 ~~$6,550,000~~**	

PROJECT LOCATION	TYPE OF WORK	FY 2025-26	FY 2026-27	FY 2027-28	FY 2028-29	FY 2029-30	TOTAL COST	FUND SOURCE
CITY FACILITIES PROJECTS								
1. Doral Central Park Parking Garage	Facility Construction	$5,150,000	$25,000,000	$0	$0	$0	$30,150,000	GF
2. New Police Headquarters	Facility Construction	$8,100,000	$20,000,000	$20,000,000	$0	$0	$48,100,000	GF
Facilities Cost Subtotal		**$13,250,000**	**$45,000,000**	**$20,000,000**	**$0**	**$0**	**$78,250,000**	
TOTAL CITY CAPITAL COST		**$18,262,000** ~~**$16,562,000**~~	**$61,638,000** ~~**$54,138,000**~~	**$38,473,000** ~~**$28,673,000**~~	**$12,828,500** ~~**$8,728,500**~~	**$14,685,500** ~~**$11,785,500**~~	**$145,887,000** ~~**$119,887,000**~~	

** Source: City of Doral Public Works Dept., March 2026~~July 2025~~.*
*** Source: City of Doral Parks Dept., July 2025. Park costs do not include projects funded by the Parks Bond*
Table Key:
TF: Transportation Fund
PIF: Park Impact Fees
SG: State Appropiation for Stormwater Improvements
SWF: Stormwater Fund
GF: General Fund
PTP: People's Transportation Fund (CITT)

BACKGROUND

Overview and Purpose

The Economic Development Element of the City of Doral Comprehensive Plan is designed to provide a strategic framework for advancing the city's economic prosperity, resilience, and quality of life. It draws on data and policy recommendations presented in the 2017 and 2024 Economic Analysis Reports prepared by Florida International University's Metropolitan Center. The purpose is to align land use, infrastructure, workforce, and industry development strategies with Doral's evolving role as a regional economic engine in Miami-Dade County.

Strategic Importance of Doral

Since its incorporation in 2003, the City of Doral has emerged as one of South Florida's most dynamic economic sub-centers. Despite comprising less than 2% of Miami-Dade County's population, Doral contributes more than 7% of the county's employment base. Its central location, proximity to Miami International Airport, and exceptional transportation access via SR 826, SR 836, and the Florida Turnpike have made it a preferred destination for national and international business operations.

The city is home to over 6,800 business establishments, ranging from advanced industries and global headquarters to logistics hubs and innovative startups. It has also become a magnet for highly skilled professionals, with one of the region's most educated resident populations and one of the highest median household incomes in the county.

Economic Growth & Shifting Dynamics

Doral's rapid economic and population growth has reshaped its demographic profile, employment structure, and land use needs. From 2002 to 2014, employment in Doral grew by 21%, 2.6 times faster than the county average. More recently, from 2015 to 2021, the city's population increased by 42.3%, outpacing both the county and national averages.

While this growth has brought prosperity, it has also introduced new challenges:

- Limited vacant land for development is constraining future large-scale industrial or commercial projects.
- A housing affordability crisis is pushing middle-income families and younger workers out of the city.
- Severe traffic congestion from a significant mismatch between local jobs and resident workers is straining the city's transportation network.
- The rise of workshifting and remote work is disrupting traditional office markets and creating new demands for flexible, mixed-use development.

A Transition to Quality-Focused Growth

As Doral approaches buildout, the city's future economic development must prioritize quality over quantity—focusing on innovation, sustainability, and economic inclusion. Small and mid-sized firms (under 50 employees) will become the primary engines of job creation, especially within high-value industry clusters such as:

- Trade and logistics
- Advanced manufacturing
- Information technology and software
- Life sciences and healthcare
- Financial services
- Creative design and media

To remain competitive and resilient, Doral must support these sectors through policies that enhance workforce skills, incentivize innovation, expand affordable housing, and protect key employment lands.

Policy Context

Florida Statutes 163.3177 authorizes the inclusion of an economic development optional element in the local comprehensive plans. The City of Doral's Economic Development Optional Element response to this statute by setting forth principles and guidelines for commercial and industrial development, business retention, employment growth, and the efficient use of land and infrastructure. This element aligns with other adopted components of the City's Comprehensive Plan, including:

- The Future Land Use Element, which provides strategies for managing redevelopment and mixed-use transitions.
- The Transportation Element, which addresses multimodal planning and traffic congestion.
- The Housing Element, which focuses on affordability, density, and household formation trends.
- The award-winning Green Master Plan, which outlines sustainability and smart city strategies.

Supporting Documents

The Economic Development Element is supported by extensive data and analysis provided in the following technical studies:

- City of Doral Economic Analysis Report I: Competitive Assessment (2017)
- City of Doral Economic Analysis Report II: Strategic Policy Recommendations (2017)
- City of Doral Economic Analysis Report 2024 Update (FIU Metropolitan Center, 2024)
- FIU Economic Study Strategic Recommendations Chart (2023)
- These reports provide the foundational research on which this element's goals, objectives, and policies are based.
- City of Doral Biannual Economic Report June-December 2024

CITY OF DORAL COMPREHENSIVE PLAN

Data, Inventory, and Analysis

1. Population & Demographics

- Population grew by 12.2% from 2020-2025, reaching approximately 85,478 residents.
- Significant growth among working-age populations: 77.5% growth for those aged 18–34 and 47.9% growth for 35–54.
- Doral's median age (36.6) is younger than the county, state, and national averages.
- Population Growth: From 2020-2025, Doral's population increased by 12.2%, growing from approximately 76,212 to 85,478 residents. This rate far exceeds Miami-Dade County's 7.7% growth over the same period.
- Age Composition: Doral is a young city. The median age increased slightly from 33.7 in 2015 to 36.6 in 2021, but remains below the county (40.9), state (42.8), and national (38.8) averages. Notably:
  - The 18–34 age group grew by 77.5%.
  - The 35–54 age group grew by 47.9%.
- Family-Oriented Growth: Family households increased by 29.6% between 2015 and 2021, while non-family households declined. This reflects an increasing number of young families choosing to settle in Doral.

2. Education & Workforce

- 54.2% of residents aged 25+ have a bachelor's degree or higher—one of the highest in the state.
- Median wage of $41,104 for residents, significantly higher than the Miami-Dade average.
- Strong representation in advanced industries: scientific/technical services, IT, engineering, and healthcare.

Doral boasts one of the most highly educated populations in the region.

- Educational Attainment:
  - 54.2% of residents 25+ years hold a bachelor's degree or higher, compared to 33.1% for Florida and 35% nationally.
  - Graduate/professional degrees increased by 96.5% from 2015 to 2021.
- Language and Cultural Diversity: Over 80% of residents speak a language other than English at home, reflecting Doral's significant Latin American diaspora and positioning the city as a bilingual, globally connected business hub.

3. Employment & Industry Structure

- Doral's job base includes 85,542 jobs, but only 5,990 are filled by Doral residents, highlighting a jobs/housing mismatch.
- Advanced industry sectors account for over 11% of total employment.
- Key sectors: trade & logistics, life sciences, financial services, IT, creative design, and light manufacturing.

Doral's economy is highly productive, diverse, and globally integrated—but shows signs of stress from structural imbalances.

Doral participates in international events to improve international relations and expand trade.

Employment Trends

- Total Jobs: The city supports over 85,000 jobs—a major share of Miami-Dade's total employment base, despite its small geographic footprint.
- Inflow/Outflow Mismatch:
  - Only 5,990 employed Doral residents (23.2%) work in the city.
  - Approximately 85,542 jobs in Doral are filled by commuters who live elsewhere.
  - This disconnect contributes to traffic congestion and underutilization of local workforce talent.

Occupational Structure

- Residents are predominantly employed in high-skilled, high-wage occupations, such as:
  - Professional and business services
  - Information technology
  - Finance and management
- The median wage for Doral residents is $41,104—50% higher than the Miami-Dade County average.

Industry Clusters and Competitive Sectors

Doral's economy is driven by a combination of traditional sectors and advanced industries.

Advanced Industries

- Over 11% of Doral's employment base (11,727 jobs) is in the U.S. Advanced Industry Sector—higher than both state and national averages.

- Industries include:
  - Medical and diagnostic labs
  - Software and data processing
  - Scientific research
  - Aerospace and medical devices
  - Advanced manufacturing

Target Industry Clusters

Based on wage levels, multiplier effects, and employment growth, Doral's priority industry clusters are grouped into four "super-clusters":

1. Manufacturing: Apparel, electronics, aerospace, medical devices.
2. Distribution & Transportation: Freight logistics, air transport, merchant wholesalers.
3. Services: Financial, insurance, legal, business consulting.
4. Information, Design & Media: Software, architecture, media production, creative industries.

Small Business Dominance

- 83.2% of businesses employ fewer than 20 people.
- Small business formation is the city's primary job growth engine, making support for entrepreneurs and startups essential.
- Doral's "Spend Local, Save Local" Program is a free initiative that promotes local businesses. Local businesses provide discounts to Doral residents with promotions through the City of Doral Spend Local page and YouTube page.

4. Real Estate & Land Use

- Shift toward high-density housing; multifamily units now comprise 35.8% of inventory.
- High housing costs: Median single-family home price is $917,500; condos/townhomes are $450,000.
- Limited developable land—only 205 acres remain zoned for industrial/commercial use.

REAL ESTATE MARKET AND LAND AVAILABILITY

Commercial and Industrial Space

- Office market remains subdued post-COVID, with increased demand for co-working and flexible workspace models.
- Industrial land is nearly built-out. Doral's remaining land suitable for large-scale commercial or industrial development is less than 205 acres.
- Adaptive reuse and vertical redevelopment are critical strategies moving forward.
- According to the real estate experts at CoStar, demand for industrial space in Doral remains high and availability remains tight, driving up rents.

Retail Market

- Doral's retail vacancy rate is extremely low (3.4%), with strong demand driven by its mixed-use districts and tourism appeal.
- Tapestry profiles show high consumer spending power among "Up and Coming Families," "Boomburbs," and "Metro Fusion" segments.
- Annual sales volume for retail properties has diminished after two years of heightened activity, totaling $74.2 million in trades over the past year. This is down from $270 million high in 2022. Despite this

decline, market pricing has stayed a premium $40/SF in the latter half of 2024. (Source CoStar Miami Airport Retail Submarket Report 12-20-2024)

Housing and Affordability

Doral faces a critical housing affordability crisis, especially for middle-income residents and younger households.

- Median home price: $917,500 for single-family homes; $450,000 for condos/townhomes.
- Renter burden: Over 57% of renters are cost-burdened (paying >30% of income on housing).
- Owner burden: 34.1% of owners are similarly cost-burdened.
- Shift to multifamily: Multifamily (20+ unit) buildings now represent 35.8% of housing stock, up from 21.4% in 2015.

Transportation and Infrastructure Challenges

- Doral experiences some of the worst traffic congestion in the region.
- Every day, over 73,000 commuters enter Doral and 15,000 residents leave for work.
- Limited space for roadway expansion and declining state/federal transportation funding restricts traditional capacity upgrades.
- Multimodal strategies, telecommuting, and land use reform are necessary to address transportation gridlock.

5. Economic Trends & Opportunities

- Future growth depends on:
  - Small business expansion (most businesses have <20 employees)
  - Innovation and entrepreneurship
  - Adaptive reuse and mixed-use developments
- Emphasis on economic resiliency and housing affordability

Strategic Economic Development Needs

To remain economically competitive, Doral must focus on:

- Workforce alignment: Matching resident skills to local jobs.
- Innovation and technology adoption: Incentivizing R&D and startup ecosystems.
- Land optimization: Redeveloping underused parcels and protecting employment centers.
- Affordable, transit-oriented housing: Supporting the labor market and easing congestion.
- Resiliency: Planning for economic diversification, disaster recovery, and climate adaptation.

Intergovernmental Coordination, Grants Programs, and Education

The City of Doral Economic Development Division partners with institutions such as the Beacon Council, Small Business Association, Florida's SBDC at FIU, Select Florida, Miami-Dade County, CareerSource, and more to foster partnerships between entrepreneurs. Business education programs and trainings are offered through Miami Dade College and Florida International University among others.

The City of Doral supports a broad range of non-profit, educational, business and residential organizations through Community Assistance Grants.

- Community Based Organization (CBO) Grant Program
- Façade Improvement Grant Program
- PTSA Grant Program

These programs offer anywhere between $5,000 to $10,000 to aid non-profit groups to improve the community and benefit residents. Business education and outreach events span from partnerships with CareerSource to hosting local business outreach events to encourage small and minority business participation. The City also assisted with the launch of The Business Corner, an entrepreneurial training course for high school students presented at Miami Dade College.

DATA, INVENTORY, AND ANALYSIS

In Florida, the rights of property owners are protected by the Constitution's Declaration of Rights and the "Bert Harris Jr. Private Property Rights Protection Act" (Harris Act). The Harris Act entitles private property owners to relief when a specific action of a governmental entity excessively burdens, restricts or limits private property rights.

The 1985 Local Government Comprehensive Planning and Land Development Regulation Act, also known as Florida's Growth Management Act, significantly revised in 2011, to become the Community Planning Act (CPA), directs how local governments create and adopt their comprehensive plans. The CPA requires that all governmental entities in the State recognize and respect constitutional protected private property rights.

Under current Florida law, local governments create and adopt local comprehensive plans to control and direct land use and development within their jurisdictional boundaries. In accordance with the CPA, comprehensive plans must include elements which include, future land use, capital improvement, transportation, recreation and open space, and housing, among others. The comprehensive plans must be reviewed and amended once every seven years (Evaluation and Appraisal Report) to reflect any changes in State requirements.

House Bill 59 (the "Bill"), was approved by Governor DeSantis on June 29, 2021, and became effective on July 1, 2021. The Bill requires each local government to incorporate a property rights element in its comprehensive plan by the earlier of the date of adoption of its next proposed plan amendment initiated after July 1, 2021, or the date of its next scheduled comprehensive plan evaluation and appraisal. The Bill also provides a model statement of rights that local governments may adopt. A local government may adopt its own property rights element or use the following statement of rights:

The following rights shall be considered in local decision-making:

1. The right of a property owner to physically possess and control his or her interests in the property, including easements, leases, or mineral rights.

2. The right of a property owner to use, maintain, develop, and improve his or her property for personal use or for the use of any other person, subject to state law and local ordinances.

3. The right of the property owner to privacy and to exclude others from the property to protect the owner's possessions and property.

4. The right of a property owner to dispose of his or her property through sale or gift.

PREPARED FOR THE CITY OF

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BY

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